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# **MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2003**

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## *Fourchette Creek Reservoir Complex Phillips County, Montana*



Prepared for:

**MONTANA DEPARTMENT OF TRANSPORTATION**  
2701 Prospect Avenue  
Helena, MT 59620-1001

Prepared by:

**LAND & WATER CONSULTING, INC.**  
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Missoula, MT 59807

March 2004

Project No: 130091.023



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## 1.0 INTRODUCTION

The Fourchette Creek Reservoir Complex was constructed in the Missouri River Breaks in 1997 and is considered the first attempted wetland mitigation bank in Montana (Urban pers. comm.). The project was enacted to mitigate wetland impacts associated with several Montana Department of Transportation (MDT) projects constructed between 1992 and 1995 that resulted in the cumulative loss of 9.84 wetland acres. These include Stanford East & West, Geyser-North, Eddies Corner-South, Ross Fork Creek – Judith Basin County, Judith River – 6 miles NW of Moore, and Ross Fork Creek – 5 Miles NW of Moore. Constructed in Watershed #9 (Middle Missouri) within the MDT Glendive District, the site is located approximately 15 miles southwest of Sun Prairie (50 miles south of Malta) in Phillips County (**Figure 1**). The site occurs on Bureau of Land Management (BLM) lands roughly 2 miles west and 1.5 miles north of the Charles M. Russell National Wildlife Refuge.

In conjunction with the BLM, MDT's intent was to construct five 2.6 to 6-acre shallow reservoirs at the mitigation site: Puffin, Albatross, Flashlight, Pintail, and Penguin (**Figure 1**). Spaced over approximately four linear miles, these structures were designed to maximize surface area with water depths less than 3 feet, maximizing the potential for establishment of emergent vegetation. The reservoirs were constructed in intermittent drainages to collect surface runoff during spring snowmelt and rainstorm events. No wetlands were present in these areas prior to construction (MDT undated).

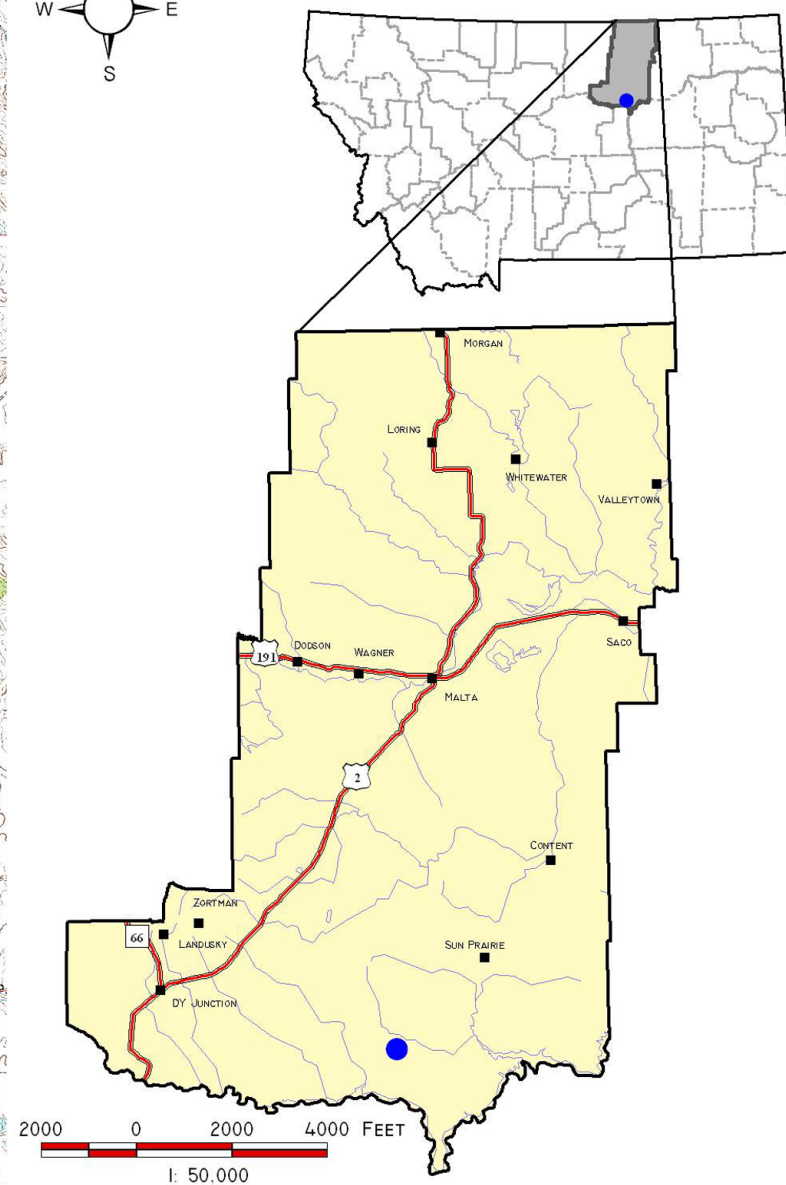
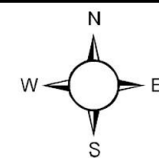
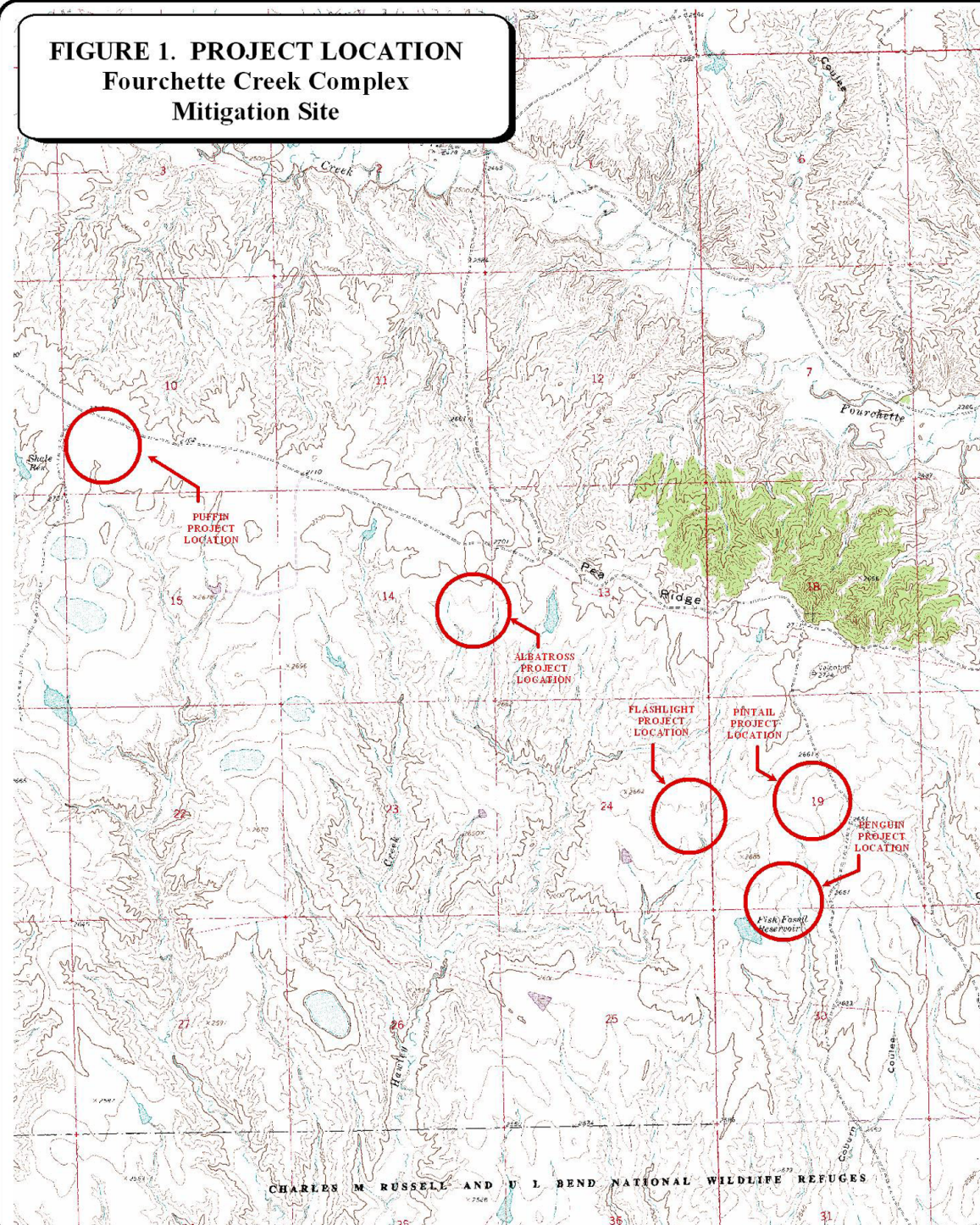
The primary objectives at the mitigation site are to provide waterfowl pair and brood habitat and promote greater distribution and use of available habitat for additional wildlife species by providing water sources, food, and cover. Specifically, MDT and BLM seek to provide approximately 10 to 22 acres of emergent wetlands with semi-permanent, fresh-mixosaline water regimes at the mitigation site. Primary wetland functions to be provided include streambank stabilization; nutrient detention/removal/transformation; sediment detention/reduction; intra/inter ecosystem integrity maintenance; and provision of a setting for recreational activities (MDT undated).

Final general success criteria at each reservoir include provision of: waterfowl pair and brood habitat (open water interspersed with emergent vegetation); a mosaic of emergent wetland vegetation communities; and adequate hydrology (maximization of areas three feet in depth) (MDT undated). Again, the goal was to create between 10 and 22 wetland acres between the five ponds.

Specific performance criteria identified in the monitoring plan contained within the project prospectus (MDT undated) address percent cover of emergent species and wetland functions. The plan states that the goal is to provide Type 3 and/or Type 4 wetlands according to the U.S. Fish & Wildlife Service (USFWS) Circular 39 definition of wetland types, with the provision of 10 to 20 percent emergent species cover within 5 years of construction. According to the monitoring plan, primary functions to be evaluated using the MDT method include wildlife use, enhanced biodiversity, water retention, silt retention, recreational opportunity, and erosion control.



**FIGURE 1. PROJECT LOCATION**  
**Fourchette Creek Complex**  
**Mitigation Site**



PROJECT #: 130091.023  
 DATE: APRIL 2001  
 LOCATION:  
 PROJECT MANAGER: B. DUTTON  
 DRAWN BY: B. NOECKER



1120 CEDAR PO BOX 8254 MISSOULA, MT 59807



Monitoring methods outlined in the plan include: estimation of percent canopy cover of wetland vegetation; mapping of vegetation zones and open water; annual photograph points; water quality sampling; and macroinvertebrate sampling. With the exception of water quality sampling, which will be conducted separately by MDT (Urban pers. comm.), each of these methods was employed during 2001 - 2003 monitoring.

The complex was first monitored in 2001, and was also monitored in 2002. This report documents the results of the 2003 monitoring effort, which is considered the final monitoring year at the site. The specific monitoring areas for each of the five impoundments are illustrated in **Figure 2** for each site (**Appendix A**).

## 2.0 METHODS

### 2.1 Monitoring Dates and Activities

Each of the five reservoirs was visited on July 31, 2003. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities and information conducted/collected included: wetland delineation; mapping of wetland/open water aquatic habitat boundaries; vegetation community mapping; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; functional assessment; and (non-engineering) examination of dike structures. Vegetation transects were not required at this site (Urban pers. comm.).

### 2.2 Hydrology

Hydrologic indicators were evaluated at each impoundment during the mid-season visit. Predicted high-water lines for each impoundment are presented on plan sheets in **Appendix D**. Wetland hydrology indicators were recorded using procedures outlined in the Army Corps (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**).

All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between wetlands and open water aquatic habitats (no rooted vegetation present) was mapped on the aerial photograph and an estimate of the average water depth at this boundary was recorded.

No groundwater monitoring wells occur at the site. If located within 18 inches of the ground surface (soil pit depth for purposes of delineation), groundwater depths were documented on the routine wetland delineation data form at each data point.

### 2.3 Vegetation

At each impoundment, general dominant species-based vegetation community types (e.g., *Typha latifolia*/*Scirpus acutus*) were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared

towards climax vegetation and may not reflect yearly changes. Estimated percent cover of the dominant species in each community type was listed on the site monitoring form (**Appendix B**). Establishment of permanent vegetation transects was not required at this mitigation site (Urban pers. comm.).

A comprehensive plant species list started in 2001 was updated as new species were encountered in 2002 and 2003. No woody species were planted at any of the impoundments. Consequently, no monitoring relative to the survival of such species was conducted.

## 2.4 Soils

Soils were evaluated during the mid-season visit according to hydric soils determination procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current terminology used by NRCS was used to describe hydric soils (USDA 1998).

## 2.5 Wetland Delineation

Wetland delineation was conducted at each impoundment according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: North Plains Region 4 (Reed 1988). The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary delineated and recorded with a resource grade GPS unit in 2001 was modified by hand as necessary on 2002 and 2003 aerial photos. The wetland/upland boundary in combination with the wetland/open water habitat boundary was used to calculate the jurisdictional wetland area developed at each impoundment.

## 2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during each mid-season visit. Indirect use indicators, including tracks; scat; burrows; eggshells; skins; bones; etc., were also recorded. These observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive species list for the entire site was compiled.

## 2.7 Birds

Bird observations were recorded during the mid-season visit. No formal census plots, spot mapping, point counts, or strip transects were conducted. Using the bird survey protocol (**Appendix E**) as general guidance, species were recorded as an observer traversed each impoundment during the mid-season visit. In general, bird observations were recorded incidental to other monitoring activities. Observations were categorized by species, activity code, and general habitat association (see data forms in **Appendix B**).

## 2.8 Macroinvertebrates

Macroinvertebrate samples were collected during the mid-season site visit and data recorded on the wetland mitigation monitoring form. Per MDT instruction, a single sample was collected at Puffin, Albatross, Flashlight, and Penguin reservoirs (Urban pers. comm.). Macroinvertebrate sampling procedures are included in **Appendix F**. The approximate locations of these sample points are shown on **Figure 2** for each site (**Appendix A**). Samples were preserved as outlined in the sampling procedure and sent to Rhithron Associates, Inc. for analysis.

## 2.9 Functional Assessment

Functional assessments were completed at each wetland impoundment using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were collected during the mid-season site visit. An abbreviated field data sheet for the 1999 MDT Montana Wetland Assessment Method was compiled to facilitate rapid collection of field information. The remainder of the functional assessment was completed in the office.

## 2.10 Photographs

Photographs were taken showing the current land use surrounding the site, the upland buffer, the monitored area, and macroinvertebrate sampling locations. Each photograph point location was recorded with a resource grade GPS in 2001. The approximate location of these photo points is shown on **Figure 2** for each site (**Appendix A**). All photographs were taken using a 50 mm lens. A description and compass direction for each photo was recorded on the wetland monitoring form.

## 2.11 GPS Data

During the 2001 monitoring season, survey points were collected with a resource grade GPS unit at all photograph locations and along wetland boundaries. No GPS data were collected during 2002 or 2003.

## 2.12 Maintenance Needs

Dike structures were examined during the site visit for obvious signs of breaching, damage, or other problems. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented.

## 3.0 RESULTS

### 3.1 Hydrology

According to the Western Regional Climate Center, Malta (50 miles north of site) yearly precipitation totals for 2001 (8.57 inches), 2002 (11.72 inches), and 2003 (11.54 inches) were 68%, 92%, and 91% of the total annual mean precipitation (12.68 inches) in this area. In 2003,

the approximate precipitation total at Malta was about 8.9 inches from January through July, which is comparable to the yearly mean of 8.7 inches for this period. Thus, precipitation was likely at or slightly above average at the site during 2003 monitoring activities.

Inundation was present at each of the five impoundments. Overall, water depths at open water/rooted vegetation interfaces ranged between approximately zero inches (the water's edge) and approximately three feet. All sites were inundated to significantly greater extents than were observed during 2002. Open water areas are shown on **Figure 3** for each site (**Appendix A**). Specific recorded values are provided for each impoundment on the attached data forms.

Penguin and Flashlight were approximately 90 percent inundated, which was comparable to 2001 observations, with average depths of one to two feet and a range of depths from zero to six+ feet. Deepest areas were located in the center of the impoundments, which were as yet unvegetated.

Pintail and Albatross were approximately 80 to 85 percent inundated, with an average depth of one to two feet and a range of depths from zero to about three feet. Both sites were inundated to a greater extent than observed during 2002, again similar to 2001 conditions. Deepest areas were located in the center of the impoundments. Based on observations recorded from 2001-2003, surface water at these sites may be of sufficient duration to kill upland plants, but of insufficient duration to support hydrophytes every year or throughout a given growing season. Consequently, these areas were classified as potential "problem areas" (seasonal wetlands) for purposes of delineation. Water was extremely turbid at these sites, which could be indicative of an upstream erosion problem, recent cattle use, or chemical or other problems.

The excavated portion of Puffin was about 80 percent inundated, but the intended mitigation area was only about 30 percent inundated and still supported virtually no wetland plants (one *Eleocharis palustris* plant was observed). Excessive depths and steep slopes in the excavated area at the dike face likely contribute to this condition. Water needs to climb several feet from the bottom of the excavated area in order to back upstream (upgradient) as designed. Based on a lack of watermarks, driftlines, etc. upgradient of the excavated area, this has probably not occurred with any frequency, if at all, over the project life.

### 3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and on the attached data form. Three wetland community types were identified and mapped on the mitigation area in 2001 (**Figure 3, Appendix A**). These included Type 1: *Hordeum jubatum*/*Eleocharis*, Type 2: *Myriophyllum*/*Potamogeton*, and Type 3: *Hordeum jubatum*/*Agropyron*. Two additional wetland types were mapped in 2002 that had established in drawdown areas at Albatross. These were Type 4: *Scirpus maritimus*/*Typha latifolia* and Type 5: *Xanthium strumarium*.

**Table 1: 2001-2003 Fourchette Creek Vegetation Species List**

Species	Region 4 (North Plains) Wetland Indicator	Penguin	Pintail	Flashlight	Albatross	Puffin
<i>Agropyron dasystachyum</i>	FAC		x	x		x
<i>Agropyron repens</i>	FAC	x	x	x	x	x
<i>Agropyron smithii</i>	--	x	x		x	x
<i>Alisma plantago-aquatica</i>	OBL			x		
<b><i>Alisma gramineum</i></b>	<b>OBL</b>			x		
<i>Artemisia cana</i>	FACU					x
<i>Artemisia frigida</i>	--	x	x	x	x	x
<i>Artemisia tridentata</i>	--	x	x	x	x	x
<i>Atriplex argentea</i>	FACU			x		
<i>Beckmannia syzigachne</i>	OBL	x	x			
<i>Bouteloua gracilis</i>	--		x		x	x
<i>Chenopodium album</i>	FAC	x	x	x	x	x
<i>Chrysothamnus nauseosus</i>	--	x	x	x		
<i>Cirsium arvense</i>	FACU	x	x	x	x	
<i>Distichlis spicata</i>	FACW		x	x	x	
<i>Echinochloa crusgalli</i>	FACW		x		x	
<i>Eleocharis acicularis</i>	OBL	x	x	x	x	
<i>Eleocharis palustris</i>	OBL	x	x	x	x	x
<i>Elodea Canadensis</i>	OBL	x				
<i>Erodium cicutarium</i>	--		x	x		x
<i>Grindelia squarrosa</i>	--	x	x	x	x	x
<i>Gutierrezia sarothrae</i>	--	x	x		x	x
<i>Helianthus annuus</i>	FACU	x	x		x	x
<i>Hordeum jubatum</i>	FAC+	x	x	x	x	x
<b><i>Iva axillaries</i></b>	<b>FACU</b>	x	x			
<i>Juncus balticus</i>	OBL	x			x	
<i>Koeleria pyramidata</i>	--			x		
<i>Lepidium densiflorum</i>	FACU					x
<i>Marsilea vestita</i>	OBL				x	
<i>Medicago lupulina</i>	FACU					x
<i>Melilotus officinalis</i>	FACU-	x	x	x	x	x
<i>Myriophyllum spicatum</i>	OBL	x		x		
<i>Nasturtium officinale</i>	OBL			x		
<i>Opuntia sp.</i>	--	x	x	x		x
<i>Polygonum lapathifolium</i>	OBL	x	x	x	x	
<i>Polygonum sp. (upland)</i>	?		x	x	x	
<i>Potamogeton foliosus</i>	OBL	x		x	x	
<i>Puccinellia nuttalliana</i>	OBL	x	x	x		
<b><i>Ranunculus aquatilis</i></b>	<b>OBL</b>			x		
<i>Rumex crispus</i>	FACW	x	x	x	x	
<i>Sagittaria cuneata</i>	OBL	x		x	x	
<i>Salix exigua</i>	FACW+				x	x
<b><i>Sarcobatus vermiculatus</i></b>	<b>FACU</b>	x				
<i>Schizachyrium scoparium</i>	--	x				
<i>Scirpus acutus</i>	OBL	x		x	x	
<i>Scirpus americanus</i>	OBL		x	x		
<i>Scirpus maritimus</i>	NI			x	x	
<i>Spergularia rubra</i>	--			x		
<i>Thlaspi arvense</i>	NI				x	x
<i>Typha latifolia</i>	OBL	x		x	x	
<i>Xanthium strumarium</i>	FAC	x	x	x	x	x

<sup>1</sup> **Bolded** species indicate those documented in the analysis area for the first time in 2003.

In 2003, Types 1, 2, 3, and 4 were present at the mitigation site. Types 2 and 3 remained consistent over the three-year monitoring period, while Type 1 shifted to a greater dominance of *Eleocharis palustris* over *Hordeum jubatum* in 2003 at Penguin, Flashlight, and Pintail reservoirs. Type 5 had been replaced with Type 4 at Albatross due to increased inundation / saturation. Dominant species within each of these communities are listed on the attached data form (**Appendix B**). Type 1 occurs in emergent habitats surrounding impoundments at Penguin,

Flashlight, and Albatross. Type 2 occurs in aquatic bed habitats at Penguin and Flashlight. Type 3 occurs primarily around the impoundment perimeter at Pintail. Type 4 occurs around the perimeter of Albatross, where it replaced Type 5 in 2003.

Upland communities (Type 6) are dominated by upland grasslands and shrub-steppe habitats. Common species include big sage (*Artemisia tridentata*), fringed sage (*Artemisia frigida*), curlycup gumweed (*Grindelia squarrosa*), broom snakeweed (*Gutierrezia sarothrae*), prickly pear cactus (*Opuntia sp.*), rubber rabbitbrush (*Chrysothamnus nauseosus*), blue gramma (*Bouteloua gracilis*), quackgrass (*Agropyron repens*), prairie junegrass (*Koeleria pyramidata*), and western wheatgrass (*Agropyron smithii*).

No vegetation transects were required or conducted at these impoundments. However, the estimated percent canopy cover of each site by emergent and aquatic bed vegetation is presented in **Table 2**.

**Table 2: Estimated Percent Wetland Species Canopy Coverage, 2003**

Site	Estimated % Cover of Total Site by Wetland (Emergent and Aquatic Bed) Vegetation
Penguin	75% - 80%
Pintail	25% - 30%
Flashlight	75% - 80%
Albatross	30% - 40%
Puffin	0%

### 3.3 Soils

A published soil survey does not exist for Phillips County. However, soils have been mapped for the Penguin (Bascovey clay) and Albatross (Sunburst clay) sites. Generally, soils at all of the impoundments consist of poorly drained clays. Soils sampled in wetland areas at Penguin were consistently comprised of clays with a matrix color of 10YR4/2 and distinct, abundant mottles in the range of 10YR5/8, indicating a fluctuating water table. All were inundated or saturated within 12" of the surface.

Soils at Flashlight were comprised of clays with a matrix color of 2.5Y4/2 to 2.5Y or 10YR 4/3 and often contained faint mottles at 2.5Y5/6. These soils were inundated or saturated to the surface throughout the site. Because the soils support dominant vegetation species that have an indicator status of OBL or FACW and the wetland/upland border is abrupt, hydric soils are assumed to be present under application of the 1987 delineation manual (Environmental Laboratory 1987).

Soils at both Pintail and Albatross were comprised of clays with a matrix color of 10YR4/2 and faint to distinct mottles at 10YR5/6 to 10YR5/8. Gleyed 5GY4/1 soils were observed in drawdown areas of Pintail towards the center of the impoundment. Darker soils (2.5Y4/1) were observed in drawdown areas of Albatross. These soils were inundated or saturated to within 12 inches of the surface at both sites. Soils adjacent to the impoundment at Puffin were saturated within 12 inches of the surface, and were comprised of clays with a matrix color of 10YR4/1 and faint mottles at 10YR4/6. As was observed during 2001 and 2002, soils at Puffin supported virtually no wetland vegetation.



### 3.4 Wetland Delineation

Delineated wetland boundaries are illustrated for each site on **Figure 3 (Appendix A)**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Wetland perimeters increased slightly over 2002 at most sites due to increased inundation. 2003 delineation results are as follows:

Penguin:	0 wetland acres pre-existing. 1.48 wetland acres created (emergent, aquatic bed). <u>0.27 acre open water.</u> 1.75 acres total
Flashlight:	0 wetland acres pre-existing. 1.25 wetland acres created (emergent, aquatic bed). <u>0.27 acre open water.</u> 1.52 acres total
Pintail:	0 wetland acres pre-existing. 1.00 wetland acre created (emergent). <u>0.60 acre open water (at max pool).</u> 1.6 acres total
Albatross:	0 wetland acres pre-existing. 0.39 wetland acre created (emergent). <u>0.53 acre open water.</u> 0.92 acre total
Puffin:	0 wetland acres pre-existing. 0 wetland acres created. <u>0.34 acre open water.</u> 0.34 acre total

Inclusive of open water areas, approximately 6.13 acres of aquatic habitat have been created on the Fourchette Creek mitigation site to date. This is a 0.91-acre increase from the 5.22 acres delineated during 2002, apparently due to increased inundation during 2003.

### 3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2001-2003 monitoring efforts are listed in **Table 3**. Specific evidence observed, as well as activity codes pertaining to birds, are provided on the completed monitoring form in **Appendix B**. Four mammal, at least two amphibian, one reptile, and 11 bird species were noted using portions of the mitigation site during the July 2003 visit. Greatest use again appeared to occur at Penguin and Flashlight reservoirs, which both support large frog populations and also support painted turtles (*Chrysemys*

*picta*), although turtles were not observed in 2003. Several hundred tadpoles were observed at Albatross, but could not be captured for identification.

More avian species were observed in the project area in 2003 than in previous years, presumably due to increased inundation at most sites. The degree of seasonal use that these impoundments receive likely varies from year to year in proportion to water availability.

Of special interest were observations of northern leopard frogs (*Rana pipiens*) at Penguin and Flashlight reservoirs. Leopard frogs are considered “species of special concern” by the Montana Natural Heritage Program (MNHP) due largely to their apparent extirpation from the portion of their historic distribution west of the Continental Divide. This species has been assigned a rank of S3 east of the Divide by the MNHP. Due to the hundreds of leopard frogs observed at Penguin and Flashlight reservoirs during 2001 and dozens observed during 2002 and 2003, these sites were classified as Category II wetlands (using the 1999 MDT Wetland Assessment Method) based on sensitive species habitat.

### 3.6 Macroinvertebrates

Macroinvertebrate sampling results are provided in **Appendix F** and were summarized by Rhithron Associates (Bollman 2003) in the italicized sections below. Bioassessment scores are presented in **Chart 1** (Bollman 2003).

*Puffin Reservoir. The overall bioassessment score improved slightly in 2003 at this site; this was mainly due to a small increase in the number of collected taxa, and an overall improvement in assemblage sensitivity. Still, poor water quality and/or limited habitats may continue to be issues here, since the sample yielded few animals. In addition, low diversity persisted in 2003. Poor biotic conditions were indicated in all years of sampling.*

*Flashlight Reservoir. There were very few organisms in the sample collected at this site. However, the animals that were collected represented a diverse, if sparse, assemblage. This suggests that habitats were complex. The large contribution of predators to the functional composition of the assemblage adds strength to this hypothesis. The low biotic index value suggests that water quality was good at this site. Scores indicate fairly stable, suboptimal biotic condition.*

*Penguin Reservoir. Biotic conditions were rated optimal at this site in 2003. The site supported a diverse assemblage, and the composition of the fauna suggested ample habitats. The biotic index value was near the median for sites in this study, suggesting fairly good water quality. The functional mix was dominated by gatherers, which is consistent with expectations for a stable wetland.*

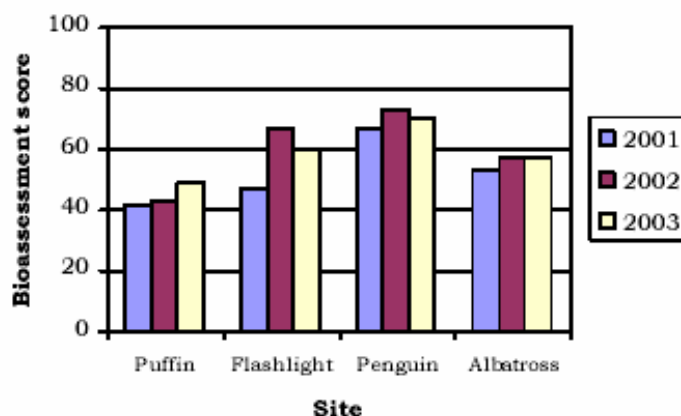
**Table 3: Fish and Wildlife Species Observed on the Fourchette Creek Mitigation Complex, 2001-2003**

	Penguin	Flashlight	Pintail	Albatross	Puffin
<b>FISH</b>					
Unidentified Minnow Species ( <i>Hybognathus</i> sp.)		x			
<b>AMPHIBIANS</b>					
Western Chorus Frog ( <i>Pseudacris triseriata</i> )	x				
Northern Leopard Frog ( <i>Rana pipiens</i> )	x	x		x	
Woodhouse's Toad ( <i>Bufo woodhousii</i> )	x	x	x		
Short-horned Lizard ( <i>Phrynosoma hernandesi</i> )					x
<b>REPTILES</b>					
Painted Turtle ( <i>Chrysemys picta</i> )	x	x			
Plains Garter Snake ( <i>Thamnophis radix</i> )	x	x	x		
<b>BIRDS</b>					
Blue-winged Teal ( <i>Anas discors</i> )			x		
Eastern Kingbird ( <i>Tyrannus tyrannus</i> )	x	x	x		
Northern Harrier ( <i>Circus cyaneus</i> )	x	x		x	
Killdeer ( <i>Charadrius vociferous</i> )		x		x	
Spotted Sandpiper ( <i>Actitis macularia</i> )	x	x	x		
Gadwall ( <i>Anas strepera</i> )	x	x	x	x	
American Avocet ( <i>Recurvirostra americana</i> )	x		x	x	
Savannah Sparrow ( <i>Passerculus sandwichensis</i> )			x		
Willet ( <i>Catoptrophorus semipalmatus</i> )		x		x	
Mourning Dove ( <i>Zenaida macroura</i> )			x	x	
Northern Shoveler ( <i>Anas clypeata</i> )	x				
Grebe ( <i>Podiceps</i> sp.)			x		
Wilson's Phalarope ( <i>Phalaropus tricolor</i> )			x		
Canada Goose ( <i>Branta canadensis</i> )			x		
American Coot ( <i>Fulica americana</i> )		x	x		
<b>MAMMALS</b>					
Elk ( <i>Cervus elaphus</i> )					x
Coyote ( <i>Canis latrans</i> )				x	
Mule Deer ( <i>Odocoileus hemionus</i> )	x		x		x
Raccoon ( <i>Procyon lotor</i> )		x		x	x
Red Fox ( <i>Vulpes vulpes</i> )			x		
Bolded species were observed during 2003 monitoring. All other species were observed during one or more of the previous monitoring years, but not during 2003.					

Albatross Reservoir. Taxa richness and assemblage sensitivity have slowly increased between 2001 and 2003 at this site. Sub-optimal, but improving habitat and water quality conditions appear to be indicated. Water column filter-feeders and shredders are the major functional components of the fauna, suggesting that large organic debris and suspended organic material were ample.

Pintail Reservoir: Macroinvertebrates were not sampled at Pintail Reservoir.

**Chart 1: Fourchette Creek Reserve Bioassessment Scores, 2001-2003**



### 3.7 Functional Assessment

Completed functional assessment forms are presented in **Appendix B**. Functional assessment results are summarized in **Table 4** and are similar to identical to 2001 and 2002 results. Penguin and Flashlight rated as Category II wetlands, primarily due to high sensitive species habitat (northern leopard frog) ratings (see discussion under **Section 3.5**). These sites would have achieved higher scores, but for the high disturbance associated with grazing. Each of these sites provides habitat for a variety of wildlife species, particularly amphibians. Penguin and Flashlight both support emergent and aquatic bed communities, and, based on MDT observations (Urban pers. comm.), Flashlight provides a degree of fish habitat. Wildlife habitat, surface water storage, sediment/nutrient/toxicant removal, shoreline stabilization, and food chain support are prominent functions at these sites.

Pintail and Albatross rated as Category IV wetlands. This was primarily due to low vegetative diversity, high disturbance (grazing), and low acreage of actual wetlands present within these assessment areas. Surface water storage is a prominent function at these sites. It should be noted that sediment/nutrient/toxicant removal received a low rating due to the extreme turbidity (impairment) and lack of wetland vegetation at these sites.

A wetland functional assessment was not conducted at Puffin due to the absence of wetlands at this site. According to MDT (Urban pers. comm.) the site is periodically used as an elk wallow, but contained a dozen cattle during 2002 and 2003 monitoring efforts.

Based on functional assessment results (**Table 4**), approximately 25 functional units have been gained thus far at the Fourchette Creek mitigation site, a gain of 4 functional units since 2002.

### 3.8 Photographs

Representative photographs taken from photo-points in 2003 are provided in **Appendix C**. A presentation of 2001-2003 aerial photographs for each impoundment is also provided in **Appendix C**.

**Table 4: Summary of 2003 Wetland Function/Value Ratings and Functional Points <sup>1</sup> at the Fourchette Creek Mitigation Project**

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Wetland Sites				
	Penguin Reservoir	Flashlight Reservoir	Pintail Reservoir	Albatross Reservoir	Puffin Reservoir
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	NA (no wetlands)
MNHP Species Habitat	High (1.0)	High (1.0)	Low (0.2)	Low (0.1)	NA (no wetlands)
General Wildlife Habitat	High (0.8)	High (0.8)	Mod (0.7)	Low (0.3)	NA (no wetlands)
General Fish/Aquatic Habitat	NA	Mod (0.5)	NA	NA	NA (no wetlands)
Flood Attenuation	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	NA (no wetlands)
Short and Long Term Surface Water Storage	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	NA (no wetlands)
Sediment, Nutrient, Toxicant Removal	Mod (0.5)	Mod (0.5)	Low (0.3)	Low (0.3)	NA (no wetlands)
Sediment/Shoreline Stabilization	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	NA (no wetlands)
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	Low (0.3)	Low (0.3)	NA (no wetlands)
Groundwater Discharge/Recharge	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	NA (no wetlands)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	NA (no wetlands)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	NA (no wetlands)
Actual Points/Possible Points	5.1 / 11	5.6 / 12	3.2 / 11	2.7 / 11	NA (no wetlands)
% of Possible Score Achieved	46%	47%	29%	25%	NA (no wetlands)
Overall Category	II	II	IV	IV	NA (no wetlands)
Total Acreage of Assessed Aquatic Habitats within Easement	1.75 ac	1.52 ac	1.60 ac	0.92 ac	0.20 ac (OW only)
Functional Units (acreage x actual points)	8.9 fu	8.5 fu	5.12 fu	2.48 fu	NA (no wetlands)
Net Acreage Gain	1.75 ac	1.52 ac	1.60 ac	0.92 ac	0.34 ac (OW only)
Net Functional Unit Gain	8.9 fu	8.5 fu	5.12 fu	2.48 fu	NA (no wetlands)
Total Functional Unit "Gain"	25 Total Functional Units				

<sup>1</sup> See completed MDT functional assessment forms in Appendix B for further detail.

### 3.9 Maintenance Needs/Recommendations

All dikes were in good condition during the mid-season visit.

Puffin Reservoir has developed no wetlands, presumably due to the depth of excavation and steep gradient of side slopes. As discussed in the 2001 and 2002 reports, it is our recommendation that MDT/BLM re-visit the design of this site, which could involve filling in a portion of the pit excavated along the dike face and minor upstream excavation. This may allow water to back further upgradient, reduce water depths and side slope gradients, and increase surface area of the reservoir. This would also likely result in a more undulating shoreline, as opposed to the largely rectangular shoreline that currently exists.

It may also benefit MDT to investigate water quality at Puffin, Pintail, and Albatross for conditions that would preclude aquatic plant growth. Limited planting may also benefit these three impoundments, although water availability and quality may limit success.

All sites were impacted by grazing, primarily through trampling. MDT/BLM may want to consider fencing these areas and providing water gaps to deeper areas in order to allow cattle access while confining associated impacts.

### 3.10 Current Credit Summary

Target performance criteria included provision of 10 to 20 percent emergent species cover within 5 years of construction. This was achieved at Penguin, Flashlight, Pintail, and Albatross reservoirs (during drawdown periods), but not at Puffin (**Table 2**).

Primary target wetland functions included wildlife use, enhanced biodiversity, water retention, silt retention, recreational opportunity, and erosion control. Highest quality wildlife habitat is provided at Penguin and Flashlight, as are biodiversity, silt retention, and erosion control. Other reservoirs provide silt retention, but in excessive quantities that impair them. A degree of erosion control is also provided at these sites, but is limited by scant vegetation. All sites provide water retention, and none of the sites were perceived to provide substantial recreational opportunities.

As the project stands, approximately 6.13 acres of aquatic habitats have been created, inclusive of all open water components. Approx. 4.66 acres of “wetlands” have been created, inclusive of minor open water components associated with Penguin and Flashlight reservoirs. Approximately 25 functional units have been created at the site to date. The maximum assignable credit at this site as of 2003, inclusive of all open water areas, is approximately 6.13 acres.

## 4.0 REFERENCES

- Bollman, W. 2003. MDT Wetland Mitigation Monitoring Project – Aquatic Invertebrate Monitoring Summary 2001, 2002, 2003. Rhithron Associates Inc. Missoula, MT.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. US Army Corps of Engineers. Washington, DC.
- Montana Department of Transportation. Undated. *Prospectus – Fourchette Creek Reservoir Complex as a wetland mitigation bank*. Helena, MT.
- Ralph, C.J., Geupel, G.R., Pyle, P., Martin, T.E., and D.F. DeSante. 1993. *Handbook of field methods for monitoring landbirds*. Gen. Tech. Rep. PSW-GTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Dept. of Agriculture. 41 p.
- Reed, P.B. 1988. National list of plant species that occur in wetlands: North Plains (Region 4). Biological Report 88(26.4), May 1988. U.S. Fish and Wildlife Service. Washington, D.C.
- Urban, L. Wetland Mitigation Specialist, Montana Department of Transportation. Helena, MT. March 2001 and January 2003 meetings; January 2002 telephone conversations.
- USDA Natural Resources Conservation Service. 1998. *Field Indicators of Hydric Soils in the United States*, Version 4. G. Hurt, P. Whited and R. Pringle (eds.). USDA, NRCS Fort Worth, TX.

## Appendix A

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### FIGURES 2 - 3

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*MDT Wetland Mitigation Monitoring  
Fourchette Creek  
Phillips County, Montana*



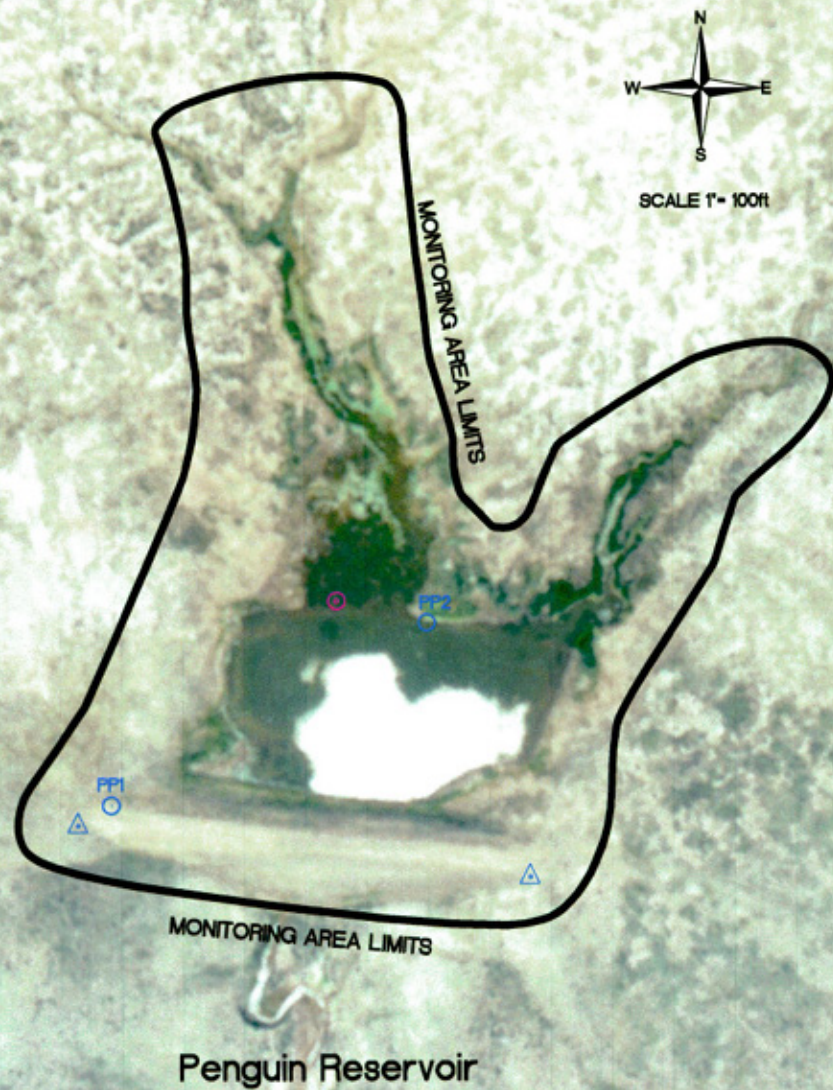


Figure 2 – Monitoring Activity Locations



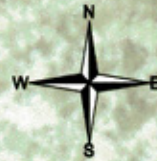


### 2003 Wetland Area:

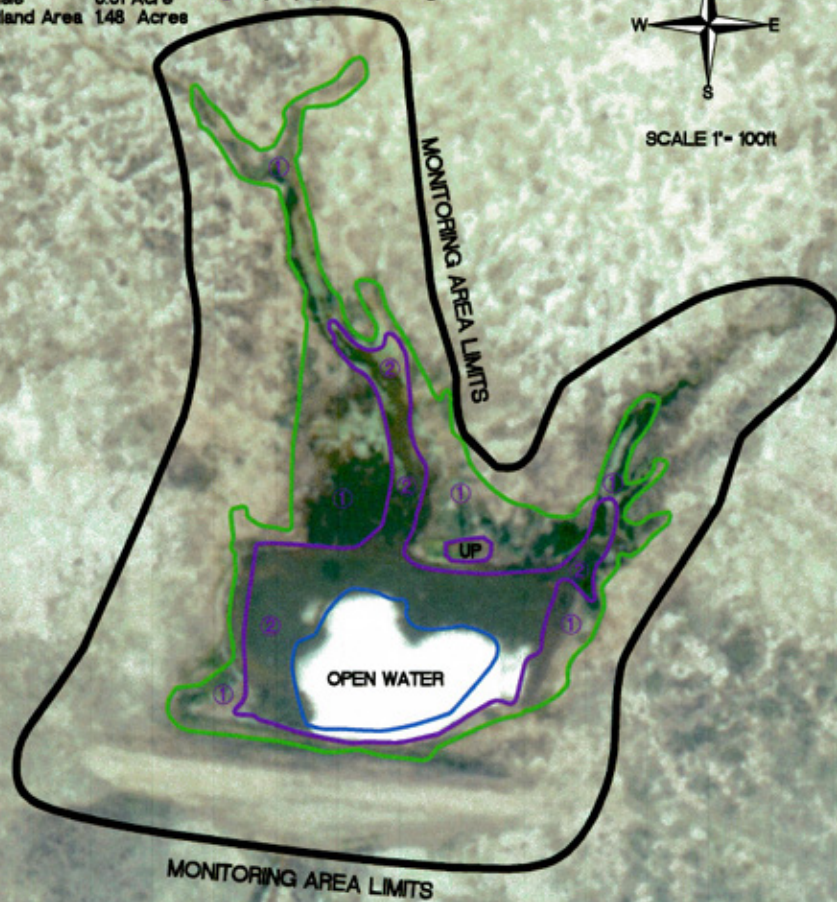
Gross Area	176 Acres
Open Water	0.27 Acres
Upland Isle	0.01 Acres
Net Wetland Area	148 Acres

### Vegetation Types:

- ① Hordeum/Eleocharis
- ② Myriophyllum/Potamogeton



SCALE 1" = 100ft



MONITORING AREA LIMITS

Penguin Reservoir

## Figure 3 - Mapped Site Features 2003

### 2003 Wetland Area:

Gross Area	163 Acres
Open Water	0.60 Acres
Upland Isle	0.03 Acres
Net Wetland Area	100 Acres

### Legend:

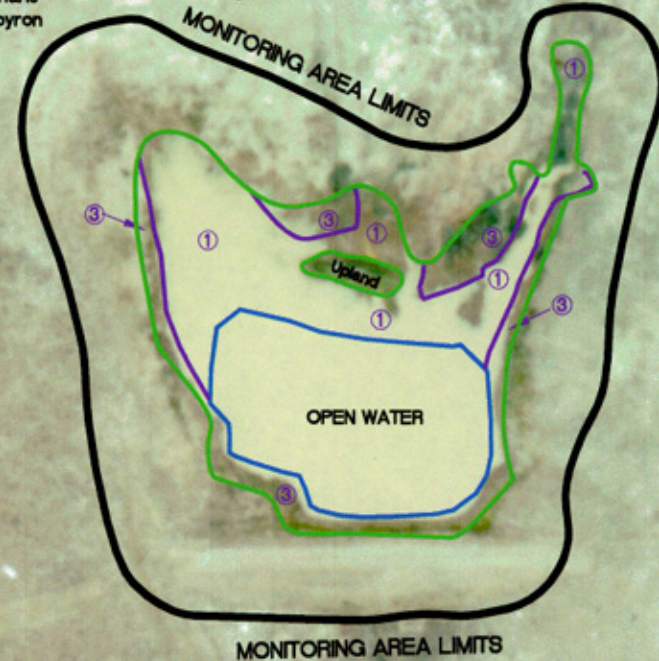
- Monitoring Area Limits
- Wetland - Upland Boundary (Aerial photo edited)
- Wetland - Open Water Boundary
- Vegetation Community Boundary



SCALE 1" = 100ft

### Vegetation Types:

- ① Hordeum/Eleocharis
- ③ Hordeum/Agropyron



MONITORING AREA LIMITS

Pintail Reservoir

NOT TO SCALE

PROJ NO: 130001.023  
FILE NAME: TASHQ230101-Pin-Basis  
SCALE: 1" = 100 ft  
LOCATION: Fourchette Creek

DRAWN: RA  
CHECKED:  
APPROVED: JB  
PROJ MGR: BD

LAND & WATER CONSULTING, INC.  
P.O. BOX 888  
Middletown, VT 05757

SHEET NUMBER  
**3**  
REV: -  
DATE: 1-20-04

PROJECT NAME: MDT Fourchette Creek Wetland Mitigation  
DRAWING TITLE: Mapped Site Features 2003



# Figure 2 - Monitoring Activity Locations

## Legend

Monitoring Area Limits

Photograph Point

Aerial Reference Point

Macro-Invertebrate Sample Point



Scale 1" = 60ft

Monitoring Area Limits

Monitoring Area Limits

Monitoring Area Limits

Flashlight Reservoir

NOT TO SCALE

<b>LAND &amp; WATER CONSULTING, INC.</b> P.O. BOX 8254 Missoula, MT 59807	PROJECT NAME	MDT Fourchette Creek Wetland Mitigation	
	DRAWING TITLE	Monitoring Activity Locations	
PROJECT NO: 130091.023	DRAWN: RAA	DATE: 11-01-2011	PROJECT MANAGER: BD
FILE NAME: Twd2011023	CHECKED: J.B.	DATE: 11-01-2011	PROJECT MANAGER: BD
SCALE: 1"=60ft	APPROVED: J.B.	DATE: 11-01-2011	PROJECT MANAGER: BD
Location: Fourchette Creek			
<div> <div>REV</div> <div>DATE</div> </div>			
<div> <div>FIGURE</div> <div>2</div> </div>			



# Figure 3 - Mapped Site Features 2003

## 2003 Wetland Area:

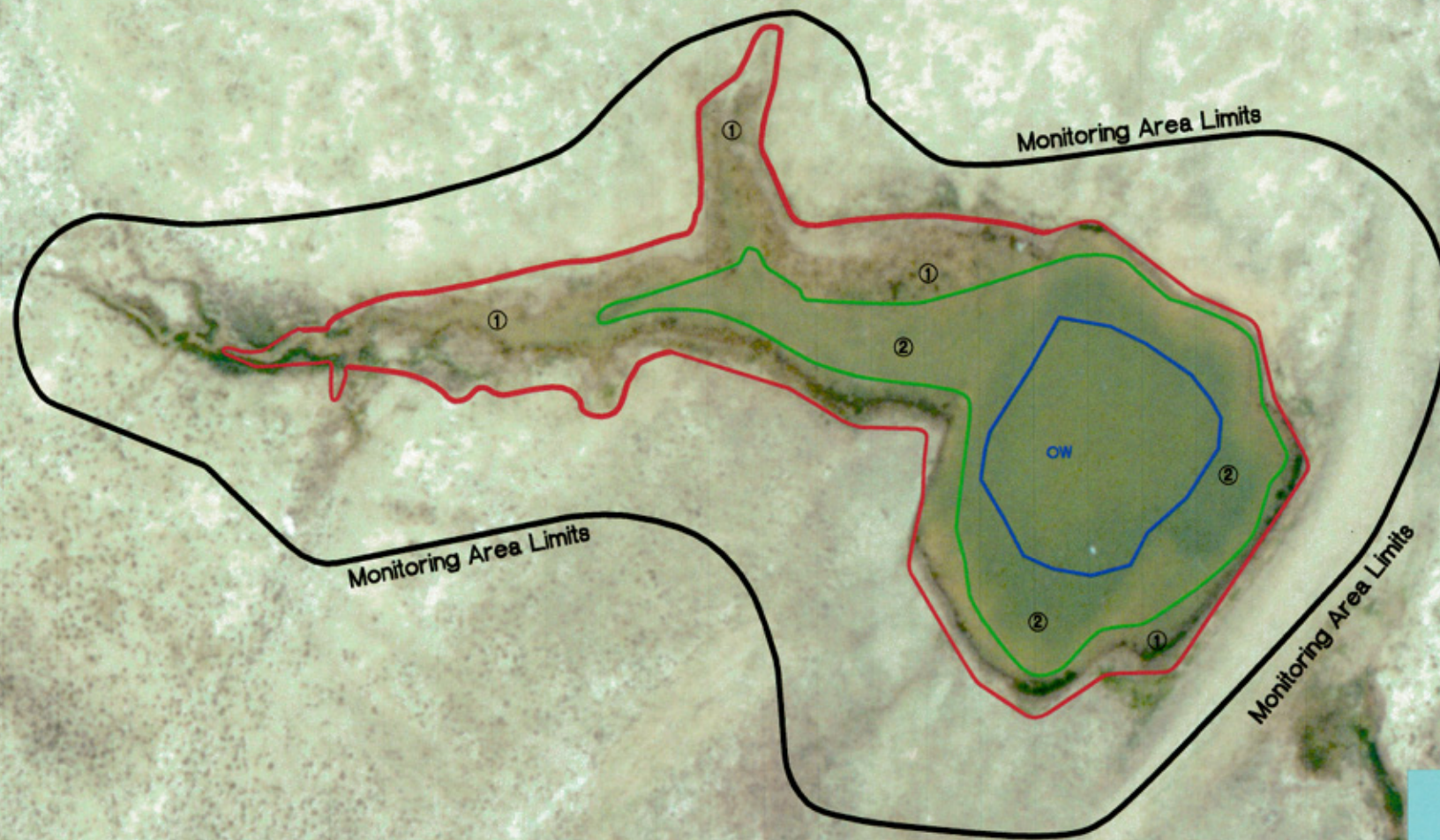
Gross Area 152 Acres  
Open Water 0.27 Acres  
Net Area 125 Acres

## Legend

Monitoring Area Limits ———  
Wetland-Upland Boundary ———  
Wetland-Open Water Boundary ———  
Vegetation Community Boundary ———

## Vegetation Types:

- ① Hordeum/Eleocharis
- ② Potamogeton/Myriophyllum



Flashlight Reservoir

NOT TO SCALE

PROJECT NAME		MDT Fourchette Creek Wetland Mitigation	
DRAWING TITLE		Mapped Site Features 2003	
PROJECT NO.	130091.023	DRAWN BY	RMA
FILE NAME	Tandocfflashlight	CHECKED BY	
SCALE	1" = 60'	APPROVED BY	JB
LOCATION	Fourchette Creek	PREPARED BY	BD
LAND & WATER CONSULTING, INC.		FIGURE 3	
P.O. BOX 8254		REV	
Missoula, MT 59807		DATE 2-13-04	

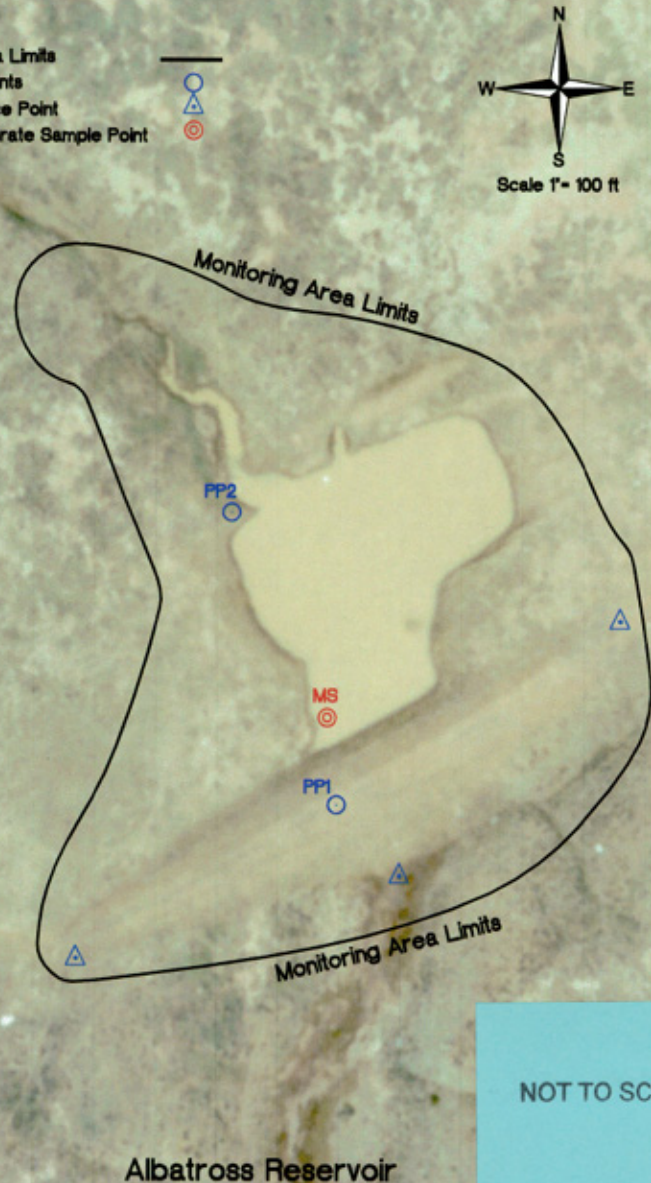


# Figure 2 - Monitoring Activity Locations



## Legend

- Monitoring Area Limits
- Photograph Points
- Aerial Reference Point
- Macro-invertebrate Sample Point

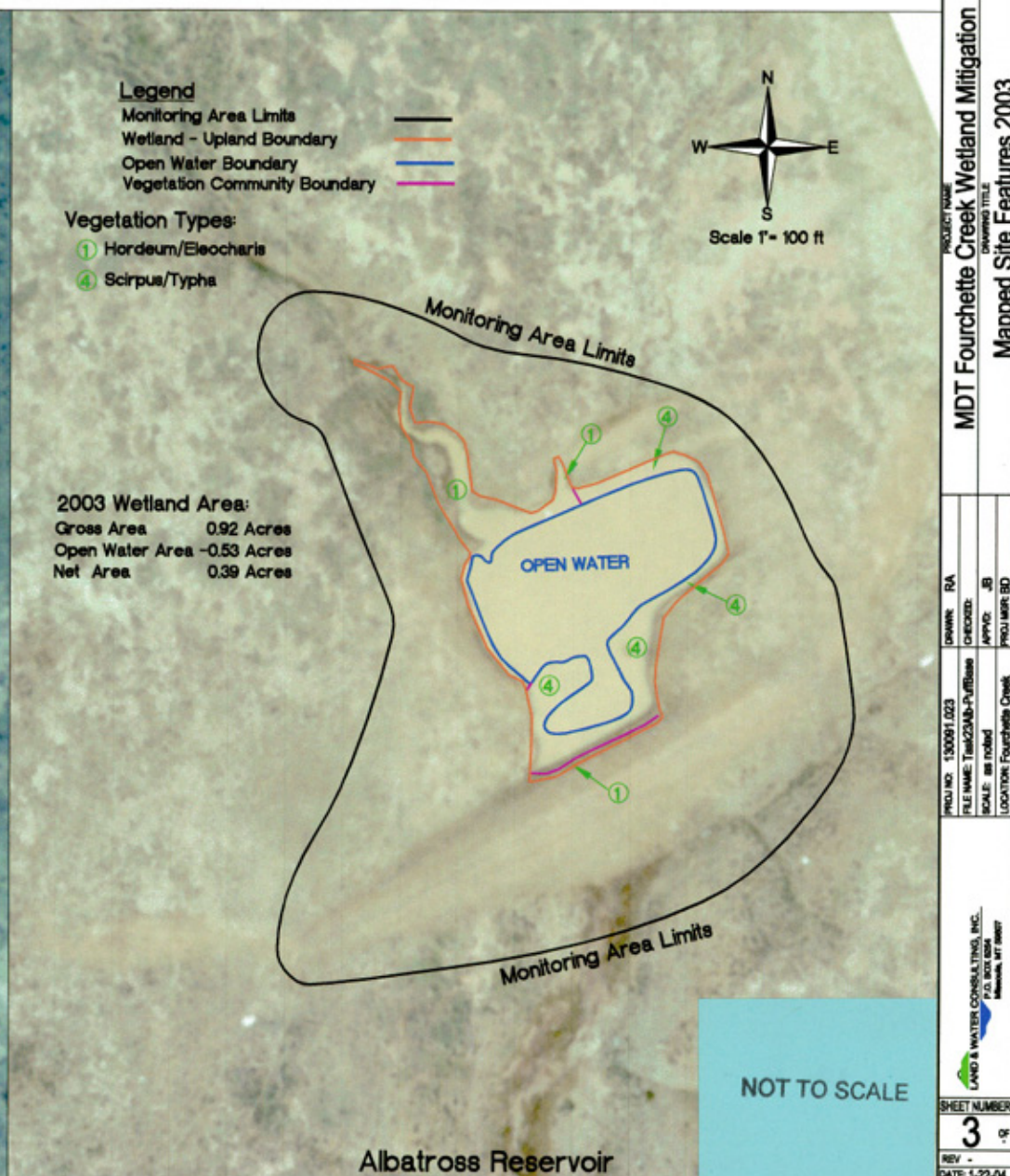
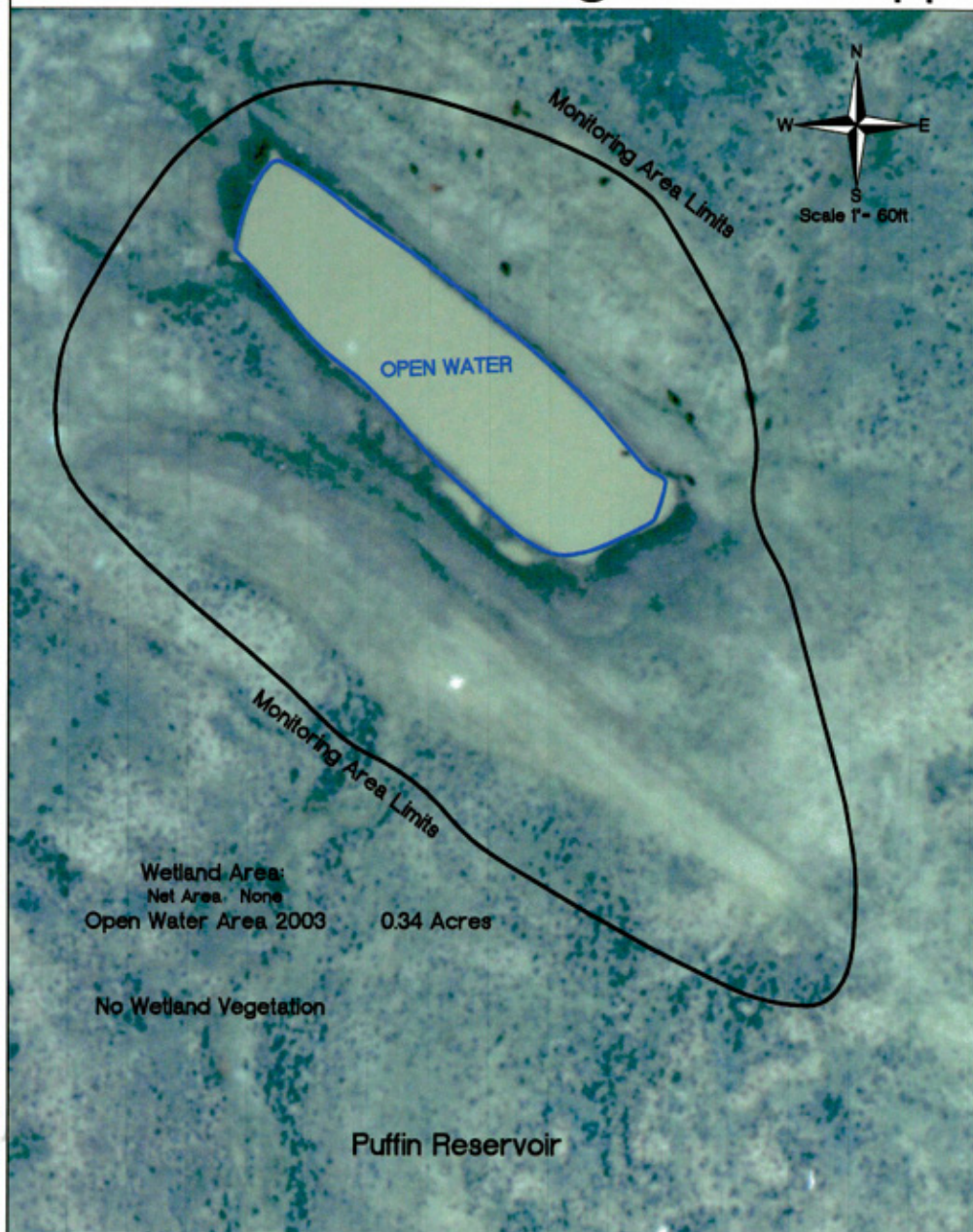


NOT TO SCALE

PROJECT NAME		MDT Fourchette Creek Wetland Mitigation	
DRAWING TITLE		Monitor Activity Locations	
PROJECT NO.	130091.023	DRAWN BY	RA
FILE NAME	TW22348-Puffin-Bas-010000	APPROVED BY	JB
SCALE	as noted	PROJECT NO.	BD
LOCATION		Fourchette Creek	
SHEET NUMBER		2	
REV		-	
DATE		-	



# Figure 3 – Mapped Site Features 2003



## **Appendix B**

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**COMPLETED 2003 WETLAND MITIGATION SITE MONITORING  
FORM**

**COMPLETED 2003 BIRD SURVEY FORMS**

**COMPLETED 2003 WETLAND DELINEATION FORMS**

**COMPLETED 2003 FUNCTIONAL ASSESSMENT FORMS**

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*MDT Wetland Mitigation Monitoring*

*Fourchette Creek*

*Phillips County, Montana*



## LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Fourchette Creek Project Number: Task 23 Assessment Date: 7 / 31 / 03  
Location: **PENGUIN RESERVOIR** MDT District: Glendive Milepost: NA  
Legal description: T 22NR\_30E Section 19 Time of Day: 0700-0800  
Weather Conditions: dry, cloudy Person(s) conducting the assessment: Berglund  
Initial Evaluation Date: 8 / 30 / 01 Visit #: 3 Monitoring Year: 3 (2003)  
Size of evaluation area: 2 acres Land use surrounding wetland: Rangeland

### HYDROLOGY

**Surface Water** Source: Precipitation  
Inundation: Present X Absent      Average depths: 1.5FT Range of depths: 2" - 5 ft  
Assessment area under inundation: 90%  
Depth at emergent vegetation-open water boundary: 2 ft  
If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes X No       
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): water marks and drift lines

### Groundwater

Monitoring wells: Present      Absent X  
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

X Map emergent vegetation-open water boundary on air photo  
X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)  
NA GPS survey groundwater monitoring wells locations if present

**COMMENTS/PROBLEMS:** Heavily grazed site. Surface water level slightly higher than observed in 2001 and 2002





## LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Fourchette Creek Project Number: Task 23 Assessment Date: 7 / 31 / 03  
Location: **FLASHLIGHT RESERVOIR** MDT District: Glendive Milepost: NA  
Legal description: T22N\_ R29E\_ Section\_24\_ Time of Day: 8:00-9:00  
Weather Conditions: dry, cloudy Person(s) conducting the assessment: Berglund  
Initial Evaluation Date: 8 / 30 / 01 Visit #: 3 Monitoring Year: 3 (2003)  
Size of evaluation area: 2-3 acres Land use surrounding wetland: Rangeland

### HYDROLOGY

**Surface Water** Source: Precipitation  
Inundation: Present X Absent      Average depths: 2 ft Range of depths: 0 - 6 ft  
Assessment area under inundation: 90 %  
Depth at emergent vegetation-open water boundary: 3 ft  
If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes X No       
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): water marks, drift lines

### Groundwater

Monitoring wells: Present      Absent X  
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

X Map emergent vegetation-open water boundary on air photo  
X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)  
NA GPS survey groundwater monitoring wells locations if present

**COMMENTS/PROBLEMS:** Heavily grazed site. Surface water level slightly higher than observed in 2001 and 2002





## LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Fourchette Creek Project Number: Task 23 Assessment Date: 7 / 31 / 03  
Location: **PINTAIL RESERVOIR** MDT District: Glendive Milepost: NA  
Legal description: T22N\_ R30E\_ Section\_19\_ Time of Day: 9:00-10:00  
Weather Conditions: dry, cloudy Person(s) conducting the assessment: Berglund  
Initial Evaluation Date: 8 / 30 / 01 Visit #: 3 Monitoring Year: 3 (2003)  
Size of evaluation area: 2-3 acres Land use surrounding wetland: Rangeland

### HYDROLOGY

**Surface Water** Source: Precipitation  
Inundation: Present X Absent \_\_\_\_\_ Average depths: 1-2ft Range of depths: 0 - 3 ft  
Assessment area under inundation: 85 %  
Depth at emergent vegetation-open water boundary: 6" ft  
If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes X No \_\_\_\_\_  
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): DRIFT LINES  
\_\_\_\_\_  
\_\_\_\_\_

### Groundwater

Monitoring wells: Present \_\_\_\_\_ Absent X  
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

X Map emergent vegetation-open water boundary on air photo  
X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)  
NA GPS survey groundwater monitoring wells locations if present

**COMMENTS/PROBLEMS:** Heavily grazed site. Surface water levels much higher than observed in 2002. Extent of inundation similar to that on depicted 2001 aerial photographs.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Fourchette Creek Project Number: Task 23 Assessment Date: 7 / 31 / 03  
Location: **ALBATROSS RESERVOIR** MDT District: Glendive Milepost: NA  
Legal description: T22N R29E Section 14 Time of Day: 10:00-11:00  
Weather Conditions: dry, cloudy Person(s) conducting the assessment: Berglund  
Initial Evaluation Date: 8 / 30 / 01 Visit #: 3 Monitoring Year: 3 (2003)  
Size of evaluation area: 2 acres Land use surrounding wetland: Rangeland

### HYDROLOGY

**Surface Water** Source: Precipitation  
Inundation: Present X Absent \_\_\_\_\_ Average depths: 1.5ft Range of depths: 0-3 ft  
Assessment area under inundation: 80 %  
Depth at emergent vegetation-open water boundary: 6" ft  
If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes X No \_\_\_\_\_  
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): water marks, drift lines

### Groundwater

Monitoring wells: Present \_\_\_\_\_ Absent X  
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

X Map emergent vegetation-open water boundary on air photo  
X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)  
NA GPS survey groundwater monitoring wells locations if present

**COMMENTS/PROBLEMS:** Heavily grazed site. Water levels similar to those observed in 2001; much higher than 2002 levels (1-2 feet).



## LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Fourchette Creek Project Number: Task 23 Assessment Date: 7 / 31 / 03  
Location: **PUFFIN RESERVOIR** MDT District: Glendive Milepost: NA  
Legal description: T22N\_ R29E\_ Section\_10\_ Time of Day: 11:00-12:00  
Weather Conditions: dry, cloudy Person(s) conducting the assessment: Berglund  
Initial Evaluation Date: 8 / 30 / 01 Visit #: 3 Monitoring Year: 3 (2003)  
Size of evaluation area: 2 acres Land use surrounding wetland: Rangeland

### HYDROLOGY

**Surface Water** Source: Precipitation

Inundation: Present X Absent      Average depths: 1 ft Range of depths: 0 - 2 ft

Assessment area under inundation: 30 %

Depth at emergent vegetation-open water boundary: 2 ft

If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes      No X

Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.):     

### Groundwater

Monitoring wells: Present      Absent X

Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

X Map emergent vegetation-open water boundary on air photo

X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)

NA GPS survey groundwater monitoring wells locations if present

**COMMENTS/PROBLEMS:** Heavily grazed site; virtually no emergent wetland developing; no vegetation establishment adjacent to pond. As noted in 2001 and 2002, site was over-excavated and would need to flood to about 10 feet or more in depth to flood uplands to the north.



## VEGETATION COMMUNITIES

Community No.:\_1\_ Community Title (main species):\_HOR JUB / ELE PAL\_\_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover
HOR JUB	21-50	RUM CRI	1-5
ELE PAL	>50	JUN BAL	1-5
ELE ACI	11-20		
XAN STR	1-5		

**COMMENTS/PROBLEMS:** \_\_Eleocharis greatly increased in 2003, dominating this community type.

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Community No.:\_2\_ Community Title (main species):\_MYR SPI / POT FOL\_\_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover
MYR SPI	>50		
POT FOL	>50		
ELO CAN	11-20		
SAG CUN	1-5		

**COMMENTS/PROBLEMS:** \_Similar to 2001 and 2002\_\_\_\_\_

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Community No.:\_3\_ Community Title (main species):\_HOR JUB / AGR \_\_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover
HOR JUB	>50		
AGR DAS	>50		
AGR REP	21-50		

**COMMENTS/PROBLEMS:** \_\_Similar to 2001 and 2002.\_\_\_\_\_

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### Additional Activities Checklist:

\_X\_ Record and map vegetative communities on air photo



**VEGETATION COMMUNITIES (continued)**

Community No.:\_4\_ Community Title (main species):\_SCI MAR / TYP LAT\_

Dominant Species	% Cover	Dominant Species	% Cover
SCI MAR	21-50		
TYP LAT	11-20		
ELE ACI	11-20		
XAN STR	6-10		

**COMMENTS/PROBLEMS:** New in 2002 - at Albatross only in 2002 and 2003.

Community No.: 5 Community Title (main species): XAN STR (2002 only) \_\_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover
<del>XAN STR</del>	<del>≥50</del>		
<del>CHE ALB</del>	<del>21-50</del>		
<del>RUM CRI</del>	<del>6-10</del>		
<del>HOR JUB</del>	<del>6-10</del>		
<del>AGR REP</del>	<del>6-10</del>		

**COMMENTS/PROBLEMS:** \_\_\_\_ New in 2002 at Albatross only; absent in 2003 (replaced by Type 4).

Community No.: 6 Community Title (main species): UPLAND

Dominant Species	% Cover	Dominant Species	% Cover
ART TRI	21-50	BOU GRA	11-20
HEL ANN	6-10	MEL OFF	11-20
GRI SQU	11-20		
AGR SMI	11-20		
AGR REP	11-20		

**COMMENTS/PROBLEMS:** \_\_\_\_\_ varies site to site.

## COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Agropyron dasystachyum</i>	3, 6	<i>Polygonum sp. (upland)</i>	6
<i>Agropyron repens</i>	3, 5, 6	<i>Potamogeton foliosus</i>	2
<i>Agropyron smithii</i>	6	<i>Puccinellia nuttalliana</i>	1, 3
<i>Alisma plantago-aquatica</i>	2	<i>Ranunculus aquatilis</i>	2
<i>Alisma gramineum</i>	2	<i>Rumex crispus</i>	1, 5
<i>Artemisia cana</i>	6	<i>Sagittaria cuneata</i>	2
<i>Artemisia frigida</i>	6	<i>Salix exigua</i>	1, 6
<i>Artemisia tridentate</i>	6	<i>Sarcobatus vermiculatus</i>	6
<i>Atriplex argentea</i>	1, 3, 6	<i>Schizachyrium scoparium</i>	6
<i>Beckmannia syzigachne</i>	2	<i>Scirpus acutus</i>	1, 4
<i>Bouteloua gracilis</i>	6	<i>Scirpus americanus</i>	1, 4
<i>Chenopodium album</i>	5	<i>Scirpus maritimus</i>	4
<i>Chrysothamnus nauseosus</i>	6	<i>Spergularia rubra</i>	6
<i>Cirsium arvense</i>	6	<i>Thlaspi arvense</i>	6
<i>Distichlis spicata</i>	1, 3	<i>Typha latifolia</i>	1, 4
<i>Echinochloa crusgalli</i>	1, 3	<i>Xanthium strumarium</i>	1, 4, 5
<i>Eleocharis acicularis</i>	1, 4		
<i>Eleocharis palustris</i>	1, 2, 4		
<i>Elodea canadensis</i>	2		
<i>Erodium cicutarium</i>	6		
<i>Grindelia squarrosa</i>	6		
<i>Gutierrezia sarothrae</i>	6		
<i>Helianthus annuus</i>	6		
<i>Hordeum jubatum</i>	1, 3, 5		
<i>Iva axillaris</i>	1, 3		
<i>Juncus balticus</i>	1		
<i>Koeleria pyramidata</i>	6		
<i>Lepidium densiflorum</i>	6		
<i>Marsilea vestita</i>	1		
<i>Medicago lupulina</i>	6		
<i>Melilotus officinalis</i>	6		
<i>Myriophyllum spicatum</i>	2		
<i>Nasturtium officinale</i>	2		
<i>Opuntia sp.</i>	6		
<i>Polygonum lapathifolium</i>	2		

**COMMENTS/PROBLEMS:** \_Virtually no vegetation surrounding Puffin Reservoir\_\_\_\_\_

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## PLANTED WOODY VEGETATION SURVIVAL

[illegible][illegible]

## BIRDS

Were man made nesting structures installed? Yes\_\_\_\_ No\_\_X\_Type:\_\_\_\_ How many?\_\_\_\_ Are the nesting structures being utilized? Yes\_\_\_\_ No\_\_\_\_ Do the nesting structures need repairs? Yes\_\_\_\_ No\_\_\_\_

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
deer (Puffin, Flashlight, Albatross)	0	yes			
unidentified tadpoles, suspect western chorus frog (Albatross)	500+				
northern leopard frog (Penguin, Flashlight)	50-100				
elk (near Albatross)	6				
raccoon (Puffin)	0	yes			
red fox (Pintail)	0	yes			
plains garter snake (Penguin, Pintail)	2				
Woodhouse's toad (Penguin)	1				

## \_X\_\_ Macroinvertebrate sampling (if required)

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface. There is no handwriting or other markings on the paper.



## PHOTOGRAPHS

Using a camera with a 50 mm lenses and color film take photographs of the following permanent reference points listed in the checklist below. Record the direction of the photograph using a compass. (The first time at each site establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3' above ground, survey the location with a resource grade GPS and mark the location on the air photo.)

Checklist:

- ☒ One photo for each of the 4 cardinal directions surrounding wetland
- ☒ At least one photo showing upland use surrounding wetland – if more than one upland use exists, take additional photos
- ☒ At least one photo showing buffer surrounding wetland
- ☐ One photo from each end of vegetation transect showing transect

Location	Photo Frame #	Photograph Description	Compass Reading
A		see photo sheets	
B			
C			
D			
E			
F			
G			
H			

**COMMENTS/PROBLEMS:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## GPS SURVEYING

Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points with the GPS unit set at 5 second recording rate. Record file numbers fore site in designated GPS field notebook

Checklist:

- ☐ Jurisdictional wetland boundary
- ☐ 4-6 landmarks recognizable on the air photo
- ☐ Start and end points of vegetation transect(s)
- ☐ Photo reference points
- ☐ Groundwater monitoring well locations

**COMMENTS/PROBLEMS:** ☐ No GPS data recorded in 2003 – adjustments made on aerial photo.  
\_\_\_\_\_  
\_\_\_\_\_



## WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:

- ☒ Delineate wetlands according to the 1987 Army Corps manual.
- ☒ Delineate wetland-upland boundary on the air photo
- ☐ Survey wetland-upland boundary with a resource grade GPS survey

**COMMENTS/PROBLEMS:** See data forms

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## FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms; also attach abbreviated field forms, if used)

**COMMENTS/PROBLEMS:** See data forms

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## MAINTENANCE

Were man-made nesting structures installed at this site? YES\_\_\_ NO ☒

If yes, do they need to be repaired? YES\_\_\_ NO\_\_\_

If yes, describe problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures build or installed to impound water or control water flow into or out of the wetland?  
YES ☒ NO\_\_\_

If yes, are the structures working properly and in good working order? YES ☒ NO\_\_\_

If no, describe the problems below.

**COMMENTS/PROBLEMS:** \_\_\_\_\_

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### MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: No Transects at this site Date: \_\_\_\_\_ Examiner: \_\_\_\_\_ Transect # \_\_\_\_\_

Approx. transect length: \_\_\_\_\_ Compass Direction from Start (Upland): \_\_\_\_\_

<b>Vegetation type A:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

<b>Vegetation type B:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

<b>Vegetation type C:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

<b>Vegetation type D:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		



## MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

## Cover Estimate

+= <1%	3 = 11-20%
1 = 1-5%	4 = 21-50%
2 = 6-10%	5 = >50%

**Indicator Class:**

+ = Obligate  
- = Facultative/Wet  
0 = Facultative

**Source:**

P = Planted  
V = Volunteer

Percent of perimeter % developing wetland vegetation – excluding dam/berm structures.

Establish transects perpendicular to the shoreline (or saturated perimeter). The transect should begin in the upland area. Permanently mark this location with a standard metal fencepost. Extend the imaginary transect line towards the center of the wetland, ending at the 3 foot depth (in open water), or at a point where water depths or saturation are maximized. Mark this location with another metal fencepost.

Estimate cover within a 10 ft wide “belt” along the transect length. At a minimum, establish a transect at the windward and leeward sides of the wetland. Remember that the purpose of this sampling is to monitor, not inventory, representative portions of the wetland site.

Notes: No transects at this site

[illegible]

**BIRD SURVEY – FIELD DATA SHEET**

Page\_\_1\_of\_1\_\_

Date:7/31/03

**SITE:** Fourchette Reserve

Survey Time: 0700-1200

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
<b>Penguin Reservoir</b>							
killdeer	6	F	US				
gadwall	6	Brood	MA				
blue-wing teal	5	Brood	MA				
mourning dove	1	F	UP				
<b>Pintail Reservoir</b>							
blue-wing teal	12	Broods	MA				
northern shoveler	6	Brood	MA				
grebe (no ID)	1	F	MA				
Wilson's phalarope	3	F	MA				
American avocet	2	F	MA				
killdeer	4	F	US				
gadwall	1	F	OW				
Canada goose	3	F	OW				
<b>Flashlight Reservoir</b>							
American coot	2	F	OW				
willet	2	F	MA				
killdeer	5	F	US				
<b>Albatross Reservoir</b>							
killdeer	2	F	US				
blue-wing teal	2	F	OW				
<b>Puffin Reservoir</b>							
goose tracks							

**Notes:** Plains garter snake, several dozen northern leopard frogs, Woodhouse's toad observed at Penguin. Cattle also present.

Plains garter snake, fox tracks, deer tracks at Pintail Reservoir.

Several dozen northern leopard frogs observed at Flashlight Reservoir.

Many tadpoles observed at Albatross, plus deer tracks. Six large bull elk observed heading towards Albatross – left the area when they sighted surveyors.

No wildlife observed at Puffin – goose tracks, raccoon tracks, deer tracks.

**Behavior:** BP – one of a breeding pair; BD – breeding display; F – foraging; FO – flyover; L – loafing; N – nesting

**Habitat:** AB – aquatic bed; FO – forested; I – island; MA – marsh; MF – mud flat; OW – open water; SS – scrub/shrub; UP – upland buffer; WM – wet meadow; US – unconsolidated shoreline



**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
*(1987 COE Wetlands Delineation Manual)*

Project/Site: Fourchette Creek Reserve	Project No: Task 23	Date: 31-Jul-2003
Applicant/Owner: Montana Department of Transportation		County: Phillips
Investigators: Berglund		State: Montana
		Plot ID: 1

Do Normal Circumstances exist on the site?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: EM / AB
Is the site significantly disturbed (Atypical Situation)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Transect ID: NA
Is the area a potential Problem Area?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Field Location:
(If needed, explain on the reverse side)		Flashlight Reservoir

VEGETATION (USFWS Region No. 4)					
Dominant Plant Species (Latin/Common)	Stratum	Indicator	Plant Species (Latin/Common)	Stratum	Indicator
<i>Hedeum pectinatum</i>	Herb	FACW	<i>Myriophyllum spicatum</i>	Herb	OBL
<i>Barley, Fox Tail</i>			<i>Water-Milfoil, Eurasian</i>		
<i>Eleocharis palustris</i>	Herb	OBL	<i>Scirpus acutus</i>	Herb	OBL
<i>Spikerush, Creeping</i>			<i>Burush, Hard-Stem</i>		
<i>Potamogeton foliosus</i>	Herb	OBL	<i>Xanthium strumarium</i>	Herb	FAC
<i>Pondweed, Leafy</i>			<i>Cockle-Bur, Rough</i>		
<i>Distichlis spicata</i>	Herb	NI	<i>Nasturtium officinale</i>	Herb	OBL
<i>Sagittaria arifolia</i>			<i>Water-Cress, True</i>		
<i>Eleocharis acicularis</i>	Herb	OBL	<i>Puccinellia nuttalliana</i>	Herb	OBL
<i>Spikerush, Leafy</i>			<i>Green, Nuttall's Alkali</i>		
<i>Sagittaria cuneata</i>	Herb	OBL	<i>Rumex crispus</i>	Herb	FACW
<i>Arrow-Head, Northern</i>			<i>Dock, Curly</i>		
<i>Scirpus maritimus</i>	Herb	NI	<i>Scirpus americanus</i>	Herb	OBL
<i>Burush, Saltmarsh</i>			<i>Burush, Clays</i>		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 12/12 = 100.00%	FAC Neutral: 11/11 = 100.00%
	Numeric Index: 16/12 = 1.33
Remarks:	

HYDROLOGY	
<b>YES</b> Recorded Data/Describe in Remarks: <u>NO</u> Stream, Lake or Tide Gauge <b>YES</b> Aerial Photographs <u>NO</u> Other <b>NO</b> No Recorded Data	<b>Wetland Hydrology Indicators</b> <b>Primary Indicators</b> <b>YES</b> Inundated <b>YES</b> Saturated in Upper 12 inches <u>NO</u> Water Marks <u>NO</u> Drift Lines <b>YES</b> Sediment Deposits <b>YES</b> Drainage Patterns in Wetlands <b>Secondary Indicators</b> <u>NO</u> Oxidized Root Channels in Upper 12 inches <u>NO</u> Water-Stained Leaves <u>NO</u> Local Soil Survey Data <b>YES</b> FAC-Neutral Test <u>NO</u> Other (Explain in Remarks)
<b>Field Observations</b>  Depth of Surface Water: = 46 (in.) Depth to Free Water in Pit: NA (in.) Depth to Saturated Soil: NA (in.)	
Remarks: Soils along edge saturated to surface; pond inundated.	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
*(1987 COE Wetlands Delineation Manual)*

Project/Site: Fourchette Creek Reserve	Project No: Task 23	Date: 31-Jul-2003
Applicant/Owner: Montana Department of Transportation		County: Phillips
Investigators: Berglund		State: Montana
		Plot ID: 1

Map Unit Name (Series and Phase): Unmapped	Mapped Hydric Inclusion?
Map Symbol: NA Drainage Class: Unknown	Field Observations Confirm Mapped Type? Yes <input checked="" type="radio"/> No
Taxonomy (Subgroup): Unknown	
Profile Description:	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	B	2.5Y4/2	NA	NA NA	Clay
10	B	2.5Y4/3	2.5Y5/6	Common Faint	Clay
10	B	2.5Y4/2	2.5Y5/6	Few Faint	Clay

<b>Hydric Soil Indicators:</b> <u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Breaking in Sandy Soils <u>NO</u> Listed on Local Hydric Soils List <u>NO</u> Listed on National Hydric Soils List <b>YES</b> Other (Explain in Remarks)
Remarks: Clear wetland border; soils support obligate species. Soils are clayey and are they poorly to very poorly drained.	

WETLAND DETERMINATION	
Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	

Remarks: Emergent / aquatic bed communities surrounding and within Flashlight Reservoir.
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**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
**(1987 COE Wetlands Delineation Manual)**

Project/Site: Fourchette Creek Reserve	Project No: Task 23	Date: 31-Jul-2003
Applicant/Owner: Montana Department of Transportation		County: Phillips
Investigators: Berglund		State: Montana
		Plot ID: 2

Do Normal Circumstances exist on the site?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: EM/AB
Is the site significantly disturbed (Atypical Situation)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Transect ID: NA
Is the area a potential Problem Area?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Field Location: Penguin Reservoir
(If needed, explain on the reverse side)		

VEGETATION (USFWS Region No. 4)					
Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
<i>Hordeum jubatum</i>	Herb	FACW	<i>Potamogeton foliosus</i>	Herb	OBL
Barley, Fox-Tail			Pondweed, Leafy		
<i>Xanthium strumarium</i>	Herb	FAC	<i>Elodea canadensis</i>	Herb	OBL
Cockle-Bur, Rough			Water-Weed, Broad		
<i>Eleocharis palustris</i>	Herb	OBL	<i>Myriophyllum spicatum</i>	Herb	OBL
Spikerush, Creeping			Water-Milfoil, Eurasian		
<i>Eleocharis acicularis</i>	Herb	OBL	<i>Sagittaria cuneata</i>	Herb	OBL
Spikerush, Least			Arrow-Head, Northern		
<i>Beckmannia syzigachne</i>	Herb	OBL	<i>Rumex crispus</i>	Herb	FACW
Sloughgrass, American			Dock, Curly		
<i>Polygonum lapathifolium</i>	Herb	OBL	<i>Juncus balticus</i>	Herb	OBL
Willow-Weed			Rush, Baltic		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 12/12 = 100.00%	FAC Neutral: 11/11 = 100.00% Numeric Index: 15/12 = 1.33
Remarks:	

<b>HYDROLOGY</b> <u>YES</u> Recorded Data(Describe in Remarks): <u>NO</u> Stream, Lake or Tide Gauge <u>YES</u> Aerial Photographs <u>NO</u> Other  <u>NO</u> No Recorded Data  <b>Field Observations</b>  Depth of Surface Water:       = 48 (in.) Depth to Free Water in Pit:     N/A (in.) Depth to Saturated Soil:       N/A (in.)	<b>Wetland Hydrology Indicators</b> <b>Primary Indicators</b> <u>YES</u> Inundated <u>YES</u> Saturated in Upper 12 Inches <u>YES</u> Water Marks <u>NO</u> Drift Lines <u>NO</u> Sediment Deposits <u>YES</u> Drainage Patterns in Wetlands <b>Secondary Indicators</b> <u>NO</u> Oxidized Root Channels in Upper 12 Inches <u>NO</u> Water-Stained Leaves <u>NO</u> Local Soil Survey Data <u>YES</u> FAC-Neutral Test <u>NO</u> Other(Explain in Remarks)
Remarks: Inundated in pond, saturated at edges.	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
**(1987 COE Wetlands Delineation Manual)**

Project/Site: Fourchette Creek Reserve	Project No: Task 23	Date: 31-Jul-2003
Applicant/Owner: Montana Department of Transportation		County: Phillips
Investigators: Berglund		State: Montana
		Plot ID: 2

<b>SOILS</b>	
Map Unit Name (Series and Phase): Bascovey clay	Mapped Hydric Inclusion?
Map Symbol: 250E Drainage Class: PD (?)	Field Observations Confirm Mapped Type? <input checked="" type="radio"/> Yes <input type="radio"/> No
Taxonomy (Subgroup): Unknown	
Profile Description	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc
10	B	10YR4/2	10YR5/8	Common Distinct	Clay

<b>Hydric Soil Indicators:</b> <u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>YES</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>NO</u> Listed on Local Hydric Soils List <u>NO</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks: Sample at wetland edge.
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Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	

Remarks: EM / AB communities at Penguin Reservoir.
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Project/Site:	Fourchette Creek Reserve	Project No:	Task 23	Date:	31-Jul-2003
Applicant/Owner:	Montana Department of Transportation			County:	Phillips
Investigators:	Berglund			State:	Montana
				Plot ID:	3

VEGETATION		(USFWS Region No. 4)			
Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
<i>Hordeum jubatum</i>	Herb	FACW	<i>Agropyron dasystachyum</i>	Herb	FAC
Barley,Fox-Tail			Wheatgrass,Thick-Spike		
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Agropyron repens</i>	Herb	FAC
Grass,Barnyard			Quackgrass		
<i>Eleocharis palustris</i>	Herb	OBL	<i>Polygonum lapathifolium</i>	Herb	OBL
Spikerush,Creeping			Willow-Weed		
<i>Distichlis spicata</i>	Herb	NI	<i>Scirpus americanus</i>	Herb	OBL
Saltgrass,Inland			Bulrush,Olive's		
Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-)    7 / 7 = 100.00%			FAC Neutral:    5 / 5 = 100.00% Numeric Index:    13 / 7 = 1.86		
<b>Remarks:</b> Wetland species are emerging within the impoundment basin where surface water levels have increased from 2002. No aquatic veg.					

<p><u>YES</u> Recorded Data(Describe in Remarks):</p> <p><u>NO</u> Stream, Lake or Tide Gauge</p> <p><u>YES</u> Aerial Photographs</p> <p><u>NO</u> Other</p> <p><u>NO</u> No Recorded Data</p> <p>Field Observations</p> <p>Depth of Surface Water: = 3 (in.)</p> <p>Depth to Free Water in Pit: N/A (in.)</p> <p>Depth to Saturated Soil: N/A (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators</p> <p><u>YES</u> Inundated</p> <p><u>YES</u> Saturated in Upper 12 inches</p> <p><u>YES</u> Water Marks</p> <p><u>NO</u> Drift Lines</p> <p><u>NO</u> Sediment Deposits</p> <p><u>NO</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators</p> <p><u>NO</u> Oxidized Root Channels in Upper 12 inches</p> <p><u>NO</u> Water-Stained Leaves</p> <p><u>NO</u> Local Soil Survey Data</p> <p><u>YES</u> FAC-Neutral Test</p> <p><u>NO</u> Other(Explain in Remarks)</p>
<p>Remarks:</p> <p>Inundated to much greater extent than was observed during 2002.</p>	

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc
10	B	10YR4/2	10YR5/8	Common Distinct	Clay
10	B	10YR4/2	10YR5/6	Few Faint	Clay
10	A/B	5GY4/1	N/A	N/A N/A	Clay

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes	No	Is the Sampling Point within the Wetland?	<input checked="" type="radio"/> Yes	No
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes	No			
Hydric Soils Present?	<input checked="" type="radio"/> Yes	No			

<b>Remarks:</b> EM community at Pintail Reservoir. Wetland veg increasing in main impoundment area. Water extremely turbid.			
<b>Explanation for response to:</b> Normal Circumstances?    Atypical Situation?    Potential Problem Area?			
The site is likely a seasonal wetland (Problem Area Type b); hydrology may be present during early growing season, but is reduced or lacking during later growing season. Site was much more inundated than it appeared in 2002.			



Project/Site:	Fourchette Creek Reserve	Project No:	Task 23	Date:	31-Jul-2003
Applicant/Owner:	Montana Department of Transportation			County:	Phillips
Investigators:	Berglund			State:	Montana
				Plot ID:	4

[illegible]

10

<p><u>YES</u> Recorded Data(Describe in Remarks):</p> <p><u>NO</u> Stream, Lake or Tide Gauge</p> <p><u>YES</u> Aerial Photographs</p> <p><u>NO</u> Other</p> <p><u>NO</u> No Recorded Data</p>	<p><b>Wetland Hydrology Indicators</b></p> <p><b>Primary Indicators</b></p> <p><u>NO</u> Inundated</p> <p><u>YES</u> Saturated in Upper 12 Inches</p> <p><u>YES</u> Water Marks</p> <p><u>NO</u> Drift Lines</p> <p><u>NO</u> Sediment Deposits</p> <p><u>NO</u> Drainage Patterns in Wetlands</p> <p><b>Secondary Indicators</b></p> <p><u>NO</u> Oxidized Root Channels in Upper 12 Inches</p> <p><u>NO</u> Water-Stained Leaves</p> <p><u>NO</u> Local Soil Survey Data</p> <p><u>YES</u> FAC-Neutral Test</p> <p><u>NO</u> Other(Explain in Remarks)</p>
<p><b>Field Observations</b></p> <p>Depth of Surface Water: N/A (in.)</p> <p>Depth to Free Water in Pit: N/A (in.)</p> <p>Depth to Saturated Soil: = 12 (in.)</p>	
<p><b>Remarks:</b></p> <p>Impoundment inundated, but no wetland veg. Water very turbid. Water levels about 2' higher than observed during 2002.</p>	

\_\_\_\_\_

1. What are the major components of the human immune system?

Explanation for response to:	Normal Circumstances?	Atypical Situation?	Potential Problem Area?
The site is possibly a seasonal wetland (Problem Area Type b); hydrology may be present during early growing season, but may be reduced or lacking during later growing season.			



Project/Site:	Fourchette Creek Reserve	Project No:	Task 23	Date:	31-Jul-2003
Applicant/Owner:	Montana Department of Transportation			County:	Phillips
Investigators:	Berglund			State:	Montana
				Plot ID:	5

[illegible]

<p><u>YES</u> Recorded Data(Describe in Remarks):</p> <p><u>NO</u> Stream, Lake or Tide Gauge</p> <p><u>YES</u> Aerial Photographs</p> <p><u>NO</u> Other</p> <p><u>NO</u> No Recorded Data</p> <p>Field Observations</p> <p>Depth of Surface Water: = 48 (in.)</p> <p>Depth to Free Water in Pit: N/A (in.)</p> <p>Depth to Saturated Soil: N/A (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators</p> <p><u>YES</u> Inundated</p> <p><u>YES</u> Saturated in Upper 12 Inches</p> <p><u>YES</u> Water Marks</p> <p><u>NO</u> Drift Lines</p> <p><u>NO</u> Sediment Deposits</p> <p><u>NO</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators</p> <p><u>NO</u> Oxidized Root Channels in Upper 12 Inches</p> <p><u>NO</u> Water-Stained Leaves</p> <p><u>NO</u> Local Soil Survey Data</p> <p><u>NO</u> FAC-Neutral Test</p> <p><u>NO</u> Other(Explain in Remarks)</p>
<p>Remarks:</p> <p>impoundment inundated, perimeter saturated. Small, rectangular pond just above dike.</p>	

Map Unit Name (Series and Phase): Unmapped		Mapped Hydric Inclusion?	
Map Symbol: NA Drainage Class: Unknown		Field Observations Confirm Mapped Type? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Taxonomy (Subgroup): Unknown			
Profile Description			
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)
10	B	10YR4/1	10YR4/6
		Mottle Abundance/Contrast	
		Few Faint	
		Texture, Concretions, Structure, etc	
		Clay	
Hydric Soil Indicators:			
<u>NO</u> Histosol		<u>NO</u> Concretions	
<u>NO</u> Histic Epipedon		<u>NO</u> High Organic Content in Surface Layer in Sandy Soils	
<u>NO</u> Sulfidic Odor		<u>NO</u> Organic Streaking in Sandy Soils	
<u>NO</u> Aquic Moisture Regime		<u>NO</u> Listed on Local Hydric Soils List	
<u>NO</u> Reducing Conditions		<u>NO</u> Listed on National Hydric Soils List	
<u>YES</u> Gleyed or Low Chroma Colors		<u>NO</u> Other (Explain in Remarks)	
Remarks:			
Sample along perimeter; saturated to surface.			

Hydrophytic Vegetation Present?	Yes	<input checked="" type="radio"/> No	Is the Sampling Point within the Wetland?	Yes	<input checked="" type="radio"/> No
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes	No			
Hydric Soils Present?	<input checked="" type="radio"/> Yes	No			
<b>Remarks:</b> Puffin Reservoir. No wetland vegetation present. Site consists of flooded rectangular unvegetated pit. Water extremely turbid. Heavy cattle use.					



# MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Fourchette Creek Wetland Mitigation Reserve 2. Project #: 130091-023 Control #: NA  
 3. Evaluation Date: 7/31/2003 4. Evaluator(s): Berglund 5. Wetland / Site #(s): Albatross Reservoir  
 6. Wetland Location(s) i. T: 22 N R: 29 E S: 14 T: \_\_ N R: \_\_ E S: \_\_  
 ii. Approx. Stationing / Mileposts: NA  
 iii. Watershed: 10040104 GPS Reference No. (if applies): NA  
 Other Location Information: 50 miles south of Malta, 1.5 miles north of CM Russell NWR, Middle Missouri Watershed (#9)

7. A. Evaluating Agency MDT 8. Wetland Size (total acres): 0.92 (visually estimated)  
0.92 (measured, e.g. GPS)  
 B. Purpose of Evaluation:  
☐ Wetlands potentially affected by MDT project  
☐ Mitigation wetlands; pre-construction  
☒ Mitigation wetlands; post-construction  
☐ Other  
 9. Assessment Area (total acres): 0.92 (visually estimated)  
0.92 (measured, e.g. GPS)  
 Comments: Albatross Reservoir

## 10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS <sup>1</sup>	SYSTEM <sup>2</sup>	SUBSYSTEM <sup>2</sup>	CLASS <sup>2</sup>	WATER REGIME <sup>2</sup>	MODIFIER <sup>2</sup>	% OF AA
Depression	Palustrine	None	Emergent Wetland	Seasonally Flooded	Impounded	45
Depression	Palustrine	None	Unconsolidated Bottom	Seasonally Flooded	Impounded	55
---	---	---	---	---	---	
---	---	---	---	---	---	

<sup>1</sup> = Smith et al. 1995. <sup>2</sup> = Cowardin et al. 1979.

Comments: \_\_\_\_\_

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)  
 Common Comments: \_\_\_\_\_

## 12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	---	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	high disturbance	---

Comments: (types of disturbance, intensity, season, etc.) Grazing

ii. Prominent weedy, alien, & introduced species: CIR ARV

iii. Briefly describe AA and surrounding land use / habitat: Albatross Reservoir - Impoundment with emergent and open water components - surrounding land use is undeveloped rangeland.

## 13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥2 if one class is forested	2 Vegetated Classes or 1 if forested	= 1 Vegetated Class
Select Rating	---	---	Low

Comments: \_\_\_\_\_



#### 14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☒ S Piping plover (incidental migration)  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

ii. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14A(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	---	.3 (L)	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): \_\_\_\_\_

#### 14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.

Do not include species listed in 14A(i).

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☒ S Northern Leopard Frog  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

iii. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14B(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	---	.1 (L)	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): NUMEROUS UNIDENTIFIED TADPOLES OBSERVED 2003; SUSPECT WESTERN CHORUS FROGS (OBS. 2001).

#### 14C. General Wildlife Habitat Rating

i. Evidence of overall wildlife use in the AA: (Check either substantial, moderate, or low)

☐ **Substantial** (based on any of the following)

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

☐ **Low** (based on any of the following)

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of AA

☒ **Moderate** (based on any of the following)

- ☒ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☒ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

#### II. WILDLIFE HABITAT FEATURES (WORKING FROM TOP TO BOTTOM, SELECT APPROPRIATE AA ATTRIBUTES TO DETERMINE THE EXCEPTIONAL (E), HIGH (H), MODERATE (M), OR LOW (L))

RATING. STRUCTURAL DIVERSITY IS FROM #13. FOR CLASS COVER TO BE CONSIDERED EVENLY DISTRIBUTED, VEGETATED CLASSES MUST BE WITHIN 20% OF EACH OTHER IN TERMS OF THEIR PERCENT COMPOSITION IN THE AA (SEE #10). DURATION OF SURFACE WATER: P/P = PERMANENT/PERENNIAL; S/I = SEASONAL/INTERMITTENT; T/E = TEMPORARY/EPHEMERAL; A= ABSENT.

Structural Diversity (from #13)	<input type="checkbox"/> High								<input type="checkbox"/> Moderate								<input checked="" type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	L	--	--

iii. Rating (Using 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.)

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input checked="" type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	--	--	.3 (L)
Low	--	--	--	--

Comments: Few waterfowl / shorebirds observed; numerous unidentified tadpoles observed 2003; suspect western chorus frogs (obs. 2001).





**14D. GENERAL FISH/AQUATIC HABITAT RATING** ☒ NA (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [e.g. fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (e.g. fish use within an irrigation canal), then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. **Habitat Quality** (Pick the appropriate AA attributes in matrix to pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (e.g. submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading - 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

☐ Y ☐ N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to pick the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).)

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: NA

**14E. FLOOD ATTENUATION** ☐ NA (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

i. **Rating** (Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

☐ Y ☒ N Comments: \_\_\_\_\_

**14F. SHORT AND LONG TERM SURFACE WATER STORAGE** ☐ NA (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond <sup>3</sup> <b>5 out of 10 years</b>	--	--	--	--	.6 (M)	--	--	--	--
Wetlands in AA flood or pond <b>&lt; 5 out of 10 years</b>	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL** ☐ NA (proceed to 14H)

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains <b>no or restricted outlet</b>	--	--	--	--	--	--	.3 (L)	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: Nutrient loading from cattle use; water very turbid.



**14H. SEDIMENT/ShORELINE STABILIZATION**☐ NA (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, check NA above.

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	<i><b>Duration of Surface Water Adjacent to Rooted Vegetation</b></i>		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	.2 (L)	--

Comments: Wave action.

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

A = acreage of vegetated component in the AA. B = structural diversity rating from #13. C = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet; P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral/absent.

A	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input checked="" type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.3L	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14J. GROUNDWATER DISCHARGE/RECHARGE (D/R)** (Check the indicators in i & ii below that apply to the AA)

- i. ☐ **Discharge Indicators**

- ☐ Springs are known or observed.  
☐ Vegetation growing during dormant season/drought.  
☐ Wetland occurs at the toe of a natural slope.  
☐ Seeps are present at the wetland edge.  
☐ AA permanently flooded during drought periods.  
☐ Wetland contains an outlet, but no inlet.  
☐ Other \_\_\_\_\_

- ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.  
☐ Wetland contains inlet but not outlet.  
☐ Other \_\_\_\_\_

- iii. **Rating:** Use the information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	--
No Discharge/Recharge indicators present	0.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: \_\_\_\_\_

**14K. UNIQUENESS**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
<b>Low</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>High</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	.2L	--

Comments: \_\_\_\_\_

**14L. RECREATION / EDUCATION POTENTIAL**

- i. Is the AA a known recreational or educational site? ☐ Yes (Rate ☐ High (1.0), then proceed to 14L(ii) only] ☒ No [Proceed to 14L(iii)]

- ii. Check categories that apply to the AA: ☐ Educational / scientific study ☐ Consumptive rec. ☐ Non-consumptive rec. ☐ Other

- iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

- ☐ Yes [Proceed to 14L (ii) and then 14L(iv).] ☒ No [Rate as low in 14L(iv)]

- iv. **Rating** (Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from #12(i)		
	<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
<b>Public</b> ownership	--	--	--
<b>Private</b> ownership	--	--	.1(L)

Comments: Extremely remote



## FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.30	1	
B. MT Natural Heritage Program Species Habitat	Low	0.1	1	
C. General Wildlife Habitat	Low	0.30	1	
D. General Fish/Aquatic Habitat	NA	0.00	--	
E. Flood Attenuation	Low	0.20	1	
F. Short and Long Term Surface Water Storage	Moderate	0.60	1	
G. Sediment/Nutrient/Toxicant Removal	Low	0.30	1	
H. Sediment/Shoreline Stabilization	Low	0.20	1	
I. Production Export/Food Chain Support	Low	0.30	1	
J. Groundwater Discharge/Recharge	Low	0.10	1	
K. Uniqueness	Low	0.20	1	
L. Recreation/Education Potential	Low	0.10	1	
<b>Totals:</b>		<b><u>2.70</u></b>	<b><u>11.00</u></b>	
<b>Percent of Total Possible Points:</b>			<b><u>25%</u></b> (Actual / Possible) x 100 [rd to nearest whole #]	

<p><b>Category I Wetland:</b> (Must satisfy <b>one</b> of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation <b>and</b> answer to Question 14E(ii) is "yes"; <b>or</b></p> <p><input type="checkbox"/> Percent of total Possible Points is &gt; 80%.</p>
<p><b>Category II Wetland:</b> (Criteria for Category I not satisfied <b>and</b> meets any <b>one</b> of the following Category II criteria. If not satisfied, proceed to Category IV.)</p> <p><input type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for <b>both</b> General Wildlife Habitat <b>and</b> General Fish / Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Percent of total possible points is &gt; 65%.</p>
<p><input type="checkbox"/> <b>Category III Wetland:</b> (Criteria for Categories I, II, or IV not satisfied.)</p>
<p><b>Category IV Wetland:</b> (Criteria for Categories I or II are not satisfied <b>and</b> <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input checked="" type="checkbox"/> "Low" rating for Uniqueness; <b>and</b></p> <p><input checked="" type="checkbox"/> "Low" rating for Production Export / Food Chain Support; <b>and</b></p> <p><input checked="" type="checkbox"/> Percent of total possible points is &lt; 30%.</p>

**OVERALL ANALYSIS AREA (AA) RATING:** (Check appropriate category based on the criteria outlined above.)

☐ **I**
                 
 ☐ **II**
                 
 ☐ **III**
                 
 ☒ **IV**



# MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Fourchette Creek Wetland Mitigation Reserve      2. Project #: 130091-023      Control #: NA

3. Evaluation Date: 7/31/2003      4. Evaluator(s): Berglund      5. Wetland / Site #(s): Flashlight Reservoir

6. Wetland Location(s)    i. T: 22 N      R: 29 E      S: 24      T: \_\_ N      R: \_\_ E      S: \_\_\_\_\_

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: 10040104      GPS Reference No. (if applies): NA

Other Location Information: 50 miles south of Malta, 1.5 miles north of CM Russell NWR, Middle Missouri Watershed (#9)

7. A. Evaluating Agency MDT      8. Wetland Size (total acres): \_\_\_\_\_ (visually estimated)  
1.52 (measured, e.g. GPS)

B. Purpose of Evaluation:

☐ Wetlands potentially affected by MDT project      9. Assessment Area (total acres): \_\_\_\_\_ (visually estimated)  
☐ Mitigation wetlands; pre-construction      1.52 (measured, e.g. GPS)  
☒ Mitigation wetlands; post-construction      Comments: Flashlight Reservoir  
☐ Other

## 10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS <sup>1</sup>	SYSTEM <sup>2</sup>	SUBSYSTEM <sup>2</sup>	CLASS <sup>2</sup>	WATER REGIME <sup>2</sup>	MODIFIER <sup>2</sup>	% OF AA
Depression	Palustrine	None	Emergent Wetland	Seasonally Flooded	Impounded	45
Depression	Palustrine	None	Aquatic Bed	Semipermanently Flooded	Impounded	40
Depression	Palustrine	None	Unconsolidated Bottom	Semipermanently Flooded	Impounded	15
---	---	---	---	---	---	

<sup>1</sup> = Smith et al. 1995. <sup>2</sup> = Cowardin et al. 1979.

Comments: \_\_\_\_\_

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)

Common      Comments: \_\_\_\_\_

## 12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	---	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	high disturbance	---

Comments: (types of disturbance, intensity, season, etc.) Grazing

ii. Prominent weedy, alien, & introduced species: CIR ARV

iii. Briefly describe AA and surrounding land use / habitat: Flashlight Reservoir - Impoundment with emergent, aquatic bed, and open water components - surrounding land use is undeveloped rangeland.

## 13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	= 1 Vegetated Class
Select Rating	---	Moderate	---

Comments: \_\_\_\_\_



**14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS**

iv. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☒ S Piping plover (incidental migration)  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

v. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14A(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	---	.3 (L)	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): \_\_\_\_\_

**14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.**

Do not include species listed in 14A(i).

ii. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☒ D ☐ S Northern Leopard Frog  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

vi. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14B(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	1 (H)	---	---	---	---	---	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): NUMEROUS NORTHERN LEOPARD FROGS OBSERVED AT SITE IN2001, 2002, 2003.**14C. General Wildlife Habitat Rating**

ii. Evidence of overall wildlife use in the AA: (Check either substantial, moderate, or low)

☒ **Substantial** (based on any of the following)

- ☒ observations of abundant wildlife #s or high species diversity (during any period)  
☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ presence of extremely limiting habitat features not available in the surrounding area  
☐ interviews with local biologists with knowledge of the AA

☐ **Low** (based on any of the following)

- ☐ few or no wildlife observations during peak use periods  
☐ little to no wildlife sign  
☐ sparse adjacent upland food sources  
☐ interviews with local biologists with knowledge of AA

☐ **Moderate** (based on any of the following)

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods  
☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ adequate adjacent upland food sources  
☐ interviews with local biologists with knowledge of the AA

**II. WILDLIFE HABITAT FEATURES (WORKING FROM TOP TO BOTTOM, SELECT APPROPRIATE AA ATTRIBUTES TO DETERMINE THE EXCEPTIONAL (E), HIGH (H), MODERATE (M), OR LOW (L))**

RATING. STRUCTURAL DIVERSITY IS FROM #13. FOR CLASS COVER TO BE CONSIDERED EVENLY DISTRIBUTED, VEGETATED CLASSES MUST BE WITHIN 20% OF EACH OTHER IN TERMS OF

THEIR PERCENT COMPOSITION IN THE AA (SEE #10). DURATION OF SURFACE WATER: P/P = PERMANENT/PERENNIAL; S/I = SEASONAL/INTERMITTENT; T/E = TEMPORARY/EPHEMERAL; A= ABSENT.

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	M	--	--	--	--	--	--	--	--	--	--

iii. Rating (Using 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.)

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	.8 (H)	--
Moderate	--	--	--	--
Low	--	--	--	--

Comments: leopard frogs, painted turtles observed

**14D. GENERAL FISH/AQUATIC HABITAT RATING** ☐ NA (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [e.g. fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (e.g. fish use within an irrigation canal), then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. **Habitat Quality** (Pick the appropriate AA attributes in matrix to pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input type="checkbox"/> Permanent/Perennial			<input checked="" type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (e.g. submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading - 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	M	--	--	--	--	--

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

☐ Y ☒ N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☒ M ☐ L

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to pick the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).)

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	.5 (M)	--
No fish	--	--	--	--

Comments: LWC observers never documented fish at this site, but MDT indicates that fish have been observed (Urban pers. comm).

**14E. FLOOD ATTENUATION** ☐ NA (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

i. **Rating** (Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

☐ Y ☒ N Comments: \_\_\_\_\_

**14F. SHORT AND LONG TERM SURFACE WATER STORAGE** ☐ NA (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	.6 (M)	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL** ☐ NA (proceed to 14H)

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains <b>no or restricted outlet</b>	--	--	--	--	.5 (M)	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: Nutrient loading from cattle use.





**14H. SEDIMENT/ShORELINE STABILIZATION**☐ NA (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, check NA above.

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	<i><b>Duration of Surface Water Adjacent to Rooted Vegetation</b></i>		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	.6 (M)	--
< 35 %	--	--	--

Comments: Wave action.

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

A = acreage of vegetated component in the AA. B = structural diversity rating from #13. C = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet; P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral/absent.

A	<input type="checkbox"/> Vegetated component >5 acres						<input checked="" type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	.7M	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14J. GROUNDWATER DISCHARGE/RECHARGE (D/R)** (Check the indicators in i & ii below that apply to the AA)

- i. ☐ **Discharge Indicators**

- ☐ Springs are known or observed.  
☐ Vegetation growing during dormant season/drought.  
☐ Wetland occurs at the toe of a natural slope.  
☐ Seeps are present at the wetland edge.  
☐ AA permanently flooded during drought periods.  
☐ Wetland contains an outlet, but no inlet.  
☐ Other \_\_\_\_\_

- ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.  
☐ Wetland contains inlet but not outlet.  
☐ Other \_\_\_\_\_

- iii. **Rating:** Use the information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	--
No Discharge/Recharge indicators present	0.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: \_\_\_\_\_

**14K. UNIQUENESS**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
<b>Low</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>High</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	.2L	--

Comments: \_\_\_\_\_

**14L. RECREATION / EDUCATION POTENTIAL**

- i. Is the AA a known recreational or educational site? ☐ Yes (Rate ☐ High (1.0), then proceed to 14L(ii) only] ☒ No [Proceed to 14L(iii)]

- ii. Check categories that apply to the AA: ☐ Educational / scientific study ☐ Consumptive rec. ☐ Non-consumptive rec. ☐ Other

- iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

- ☐ Yes [Proceed to 14L (ii) and then 14L(iv).] ☒ No [Rate as low in 14L(iv)]

- iv. **Rating** (Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from #12(i)		
	<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
<b>Public</b> ownership	--	--	--
<b>Private</b> ownership	--	--	.1(L)

Comments: Extremely remote



## FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.30	1	
B. MT Natural Heritage Program Species Habitat	High	1.00	1	
C. General Wildlife Habitat	High	0.80	1	
D. General Fish/Aquatic Habitat	Moderate	0.50	1	
E. Flood Attenuation	Low	0.20	1	
F. Short and Long Term Surface Water Storage	Moderate	0.60	1	
G. Sediment/Nutrient/Toxicant Removal	Moderate	0.50	1	
H. Sediment/Shoreline Stabilization	Moderate	0.60	1	
I. Production Export/Food Chain Support	Moderate	0.70	1	
J. Groundwater Discharge/Recharge	Low	0.10	1	
K. Uniqueness	Low	0.20	1	
L. Recreation/Education Potential	Low	0.10	1	
<b>Totals:</b>		<b><u>5.6</u></b>	<b><u>12.00</u></b>	
<b>Percent of Total Possible Points:</b>			<b><u>47%</u></b> (Actual / Possible) x 100 [rd to nearest whole #]	

<p><b>Category I Wetland:</b> (Must satisfy <b>one</b> of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation <b>and</b> answer to Question 14E(ii) is "yes"; <b>or</b></p> <p><input type="checkbox"/> Percent of total Possible Points is &gt; 80%.</p>
<p><b>Category II Wetland:</b> (Criteria for Category I not satisfied <b>and</b> meets any <b>one</b> of the following Category II criteria. If not satisfied, proceed to Category IV.)</p> <p><input checked="" type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for <b>both</b> General Wildlife Habitat <b>and</b> General Fish / Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Percent of total possible points is &gt; 65%.</p>
<p><input type="checkbox"/> <b>Category III Wetland:</b> (Criteria for Categories I, II, or IV not satisfied.)</p>
<p><b>Category IV Wetland:</b> (Criteria for Categories I or II are not satisfied <b>and</b> <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; <b>and</b></p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; <b>and</b></p> <p><input type="checkbox"/> Percent of total possible points is &lt; 30%.</p>

**OVERALL ANALYSIS AREA (AA) RATING:** (Check appropriate category based on the criteria outlined above.)

☐ **I**

☒ **II**

☐ **III**

☐ **IV**



# MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Fourchette Creek Wetland Mitigation Reserve      2. Project #: 130091-023      Control #: NA

3. Evaluation Date: 7/31/2003      4. Evaluator(s): Berglund      5. Wetland / Site #(s): Penguin Reservoir

6. Wetland Location(s)    i. T: 22 N      R: 30 E      S: 19      T:    N      R:    E      S:   

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: 10040104      GPS Reference No. (if applies): NA

Other Location Information: 50 miles south of Malta, 1.5 miles north of CM Russell NWR, Middle Missouri Watershed (#9)

7. A. Evaluating Agency MDT      8. Wetland Size (total acres):    (visually estimated)  
1.75 (measured, e.g. GPS)

B. Purpose of Evaluation:

☐ Wetlands potentially affected by MDT project      9. Assessment Area (total acres):    (visually estimated)  
☐ Mitigation wetlands; pre-construction      1.75 (measured, e.g. GPS)  
☒ Mitigation wetlands; post-construction      Comments: Penguin Reservoir  
☐ Other

## 10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS <sup>1</sup>	SYSTEM <sup>2</sup>	SUBSYSTEM <sup>2</sup>	CLASS <sup>2</sup>	WATER REGIME <sup>2</sup>	MODIFIER <sup>2</sup>	% OF AA
Depression	Palustrine	None	Emergent Wetland	Seasonally Flooded	Impounded	50
Depression	Palustrine	None	Aquatic Bed	Semipermanently Flooded	Impounded	35
Depression	Palustrine	None	Unconsolidated Bottom	Semipermanently Flooded	Impounded	15
---	---	---	---	---	---	---

<sup>1</sup> = Smith et al. 1995. <sup>2</sup> = Cowardin et al. 1979.

Comments:   

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)  
Common      Comments:   

## 12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	---	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	high disturbance	---

Comments: (types of disturbance, intensity, season, etc.) Grazing

ii. Prominent weedy, alien, & introduced species: CIR ARV

iii. Briefly describe AA and surrounding land use / habitat: Penguin Reservoir - Impoundment with emergent, aquatic bed, and open water components - surrounding land use is undeveloped rangeland.

## 13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	= 1 Vegetated Class
Select Rating	---	Moderate	---

Comments:   



**14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS**

vii. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☒ S Piping plover (incidental migration)  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

viii. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14A(I) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	---	.3 (L)	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): \_\_\_\_\_

**14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.**

Do not include species listed in 14A(i).

iii. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☒ D ☐ S Northern Leopard Frog  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

ix. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14B(I) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL:	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	1 (H)	---	---	---	---	---	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): NUMEROUS NORTHERN LEOPARD FROGS OBSERVED AT SITE IN 2001, 2002, 2003.**14C. General Wildlife Habitat Rating**

iii. Evidence of overall wildlife use in the AA: (Check either substantial, moderate, or low)

☒ **Substantial** (based on any of the following)

- ☒ observations of abundant wildlife #s or high species diversity (during any period)  
☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ presence of extremely limiting habitat features not available in the surrounding area  
☐ interviews with local biologists with knowledge of the AA

☐ **Low** (based on any of the following)

- ☐ few or no wildlife observations during peak use periods  
☐ little to no wildlife sign  
☐ sparse adjacent upland food sources  
☐ interviews with local biologists with knowledge of AA

☐ **Moderate** (based on any of the following)

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods  
☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ adequate adjacent upland food sources  
☐ interviews with local biologists with knowledge of the AA

**II. WILDLIFE HABITAT FEATURES (WORKING FROM TOP TO BOTTOM, SELECT APPROPRIATE AA ATTRIBUTES TO DETERMINE THE EXCEPTIONAL (E), HIGH (H), MODERATE (M), OR LOW (L)**

RATING. STRUCTURAL DIVERSITY IS FROM #13. FOR CLASS COVER TO BE CONSIDERED EVENLY DISTRIBUTED, VEGETATED CLASSES MUST BE WITHIN 20% OF EACH OTHER IN TERMS OF

THEIR PERCENT COMPOSITION IN THE AA (SEE #10). DURATION OF SURFACE WATER: P/P = PERMANENT/PERENNIAL; S/I = SEASONAL/INTERMITTENT; T/E = TEMPORARY/EPHEMERAL; A= ABSENT.

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	M	--	--	--	--	--	--	--	--	--	--

iii. Rating (Using 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.)

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	.8 (H)	--
Moderate	--	--	--	--
Low	--	--	--	--

Comments: leopard frogs, Woodhouse's toad, painted turtles observed



**14D. GENERAL FISH/AQUATIC HABITAT RATING** ☒ NA (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [e.g. fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (e.g. fish use within an irrigation canal), then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. **Habitat Quality** (Pick the appropriate AA attributes in matrix to pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (e.g. submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading - 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

☐ Y ☐ N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to pick the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).)

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: NA

**14E. FLOOD ATTENUATION** ☐ NA (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

i. **Rating** (Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

☐ Y ☒ N Comments: \_\_\_\_\_

**14F. SHORT AND LONG TERM SURFACE WATER STORAGE** ☐ NA (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	.6 (M)	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL** ☐ NA (proceed to 14H)

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains <b>no or restricted outlet</b>	--	--	--	--	.5 (M)	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: Nutrient loading from cattle use.



**14H. SEDIMENT/ShORELINE STABILIZATION**☐ NA (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, check NA above.

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	<i>Duration of Surface Water Adjacent to Rooted Vegetation</i>		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	.6 (M)	--
< 35 %	--	--	--

Comments: Wave action.

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

A = acreage of vegetated component in the AA. B = structural diversity rating from #13. C = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet; P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral/absent.

A	<input type="checkbox"/> Vegetated component >5 acres						<input checked="" type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	.7M	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14J. GROUNDWATER DISCHARGE/RECHARGE (D/R)** (Check the indicators in i & ii below that apply to the AA)i. ☐ **Discharge Indicators**

- ☐ Springs are known or observed.  
☐ Vegetation growing during dormant season/drought.  
☐ Wetland occurs at the toe of a natural slope.  
☐ Seeps are present at the wetland edge.  
☐ AA permanently flooded during drought periods.  
☐ Wetland contains an outlet, but no inlet.  
☐ Other \_\_\_\_\_

ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.  
☐ Wetland contains inlet but not outlet.  
☐ Other \_\_\_\_\_

- iii. **Rating:** Use the information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	--
No Discharge/Recharge indicators present	0.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: \_\_\_\_\_

**14K. UNIQUENESS**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	.2L	--

Comments: \_\_\_\_\_

**14L. RECREATION / EDUCATION POTENTIAL**

- i. Is the AA a known recreational or educational site? ☐ Yes (Rate ☐ High (1.0), then proceed to 14L(ii) only] ☒ No [Proceed to 14L(iii)]

- ii. Check categories that apply to the AA: ☐ Educational / scientific study ☐ Consumptive rec. ☐ Non-consumptive rec. ☐ Other

- iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

- ☐ Yes [Proceed to 14L (ii) and then 14L(iv).] ☒ No [Rate as low in 14L(iv)]

- iv. **Rating** (Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from #12(i)		
	<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
Public ownership	--	--	--
Private ownership	--	--	.1(L)

Comments: Extremely remote



## FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.30	1	
B. MT Natural Heritage Program Species Habitat	High	1.00	1	
C. General Wildlife Habitat	High	0.80	1	
D. General Fish/Aquatic Habitat	NA	0.00	--	
E. Flood Attenuation	Low	0.20	1	
F. Short and Long Term Surface Water Storage	Moderate	0.60	1	
G. Sediment/Nutrient/Toxicant Removal	Moderate	0.50	1	
H. Sediment/Shoreline Stabilization	Moderate	0.60	1	
I. Production Export/Food Chain Support	Moderate	0.70	1	
J. Groundwater Discharge/Recharge	Low	0.10	1	
K. Uniqueness	Low	0.20	1	
L. Recreation/Education Potential	Low	0.10	1	
<b>Totals:</b>		<b><u>5.10</u></b>	<b><u>11.00</u></b>	
<b>Percent of Total Possible Points:</b>			<b><u>46%</u></b> (Actual / Possible) x 100 [rd to nearest whole #]	

<p><b>Category I Wetland:</b> (Must satisfy <b>one</b> of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation <b>and</b> answer to Question 14E(ii) is "yes"; <b>or</b></p> <p><input type="checkbox"/> Percent of total Possible Points is &gt; 80%.</p>
<p><b>Category II Wetland:</b> (Criteria for Category I not satisfied <b>and</b> meets any <b>one</b> of the following Category II criteria. If not satisfied, proceed to Category IV.)</p> <p><input checked="" type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for <b>both</b> General Wildlife Habitat <b>and</b> General Fish / Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Percent of total possible points is &gt; 65%.</p>
<p><input type="checkbox"/> <b>Category III Wetland:</b> (Criteria for Categories I, II, or IV not satisfied.)</p>
<p><b>Category IV Wetland:</b> (Criteria for Categories I or II are not satisfied <b>and</b> <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; <b>and</b></p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; <b>and</b></p> <p><input type="checkbox"/> Percent of total possible points is &lt; 30%.</p>

**OVERALL ANALYSIS AREA (AA) RATING:** (Check appropriate category based on the criteria outlined above.)

☐ **I**

☒ **II**

☐ **III**

☐ **IV**



# MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Fourchette Creek Wetland Mitigation Reserve      2. Project #: 130091-023      Control #: NA

3. Evaluation Date: 7/31/2003      4. Evaluator(s): Berglund      5. Wetland / Site #(s): Pintail Reservoir

6. Wetland Location(s)    i. T: 22 N      R: 30 E      S: 19      T:    N      R:    E      S:   

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: 10040104      GPS Reference No. (if applies): NA

Other Location Information: 50 miles south of Malta, 1.5 miles north of CM Russell NWR, Middle Missouri Watershed (#9)

7. A. Evaluating Agency MDT      8. Wetland Size (total acres):    (visually estimated)  
1.6 (measured, e.g. GPS)

B. Purpose of Evaluation:

☐ Wetlands potentially affected by MDT project      9. Assessment Area (total acres):    (visually estimated)  
☐ Mitigation wetlands; pre-construction      1.6 (measured, e.g. GPS)  
☒ Mitigation wetlands; post-construction      Comments: Pintail Reservoir  
☐ Other

## 10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS <sup>1</sup>	SYSTEM <sup>2</sup>	SUBSYSTEM <sup>2</sup>	CLASS <sup>2</sup>	WATER REGIME <sup>2</sup>	MODIFIER <sup>2</sup>	% OF AA
Depression	Palustrine	None	Emergent Wetland	Seasonally Flooded	Impounded	60
Depression	Palustrine	None	Unconsolidated Bottom	Seasonally Flooded	Impounded	40
---	---	---	---	---	---	---
---	---	---	---	---	---	---

<sup>1</sup> = Smith et al. 1995. <sup>2</sup> = Cowardin et al. 1979.

Comments:   

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)  
Common      Comments:   

## 12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	---	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	high disturbance	---

Comments: (types of disturbance, intensity, season, etc.) Grazing

ii. Prominent weedy, alien, & introduced species: CIR ARV

iii. Briefly describe AA and surrounding land use / habitat: Pintail Reservoir - Impoundment with emergent and open water components - surrounding land use is undeveloped rangeland.

## 13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	= 1 Vegetated Class
Select Rating	---	---	Low

Comments:   





**14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS**

- x. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☐ D ☒ S Piping plover (incidental migration)  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

- xi. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14A(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	---	.3 (L)	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): \_\_\_\_\_

**14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.****Do not include species listed in 14A(i).**

- iv. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Secondary habitat (**list species**) ☐ D ☐ S \_\_\_\_\_  
 Incidental habitat (**list species**) ☒ D ☐ S Northern Leopard Frog  
 No usable habitat ☐ D ☐ S \_\_\_\_\_

- xii. RATING (BASED ON THE STRONGEST HABITAT CHOSEN IN 14B(i) ABOVE, FIND THE CORRESPONDING RATING OF HIGH (H), MODERATE (M), OR LOW (L) FOR THIS FUNCTION.

HIGHEST HABITAT LEVEL	DOC/PRIMARY	SUS/PRIMARY	DOC/SECONDARY	SUS/SECONDARY	DOC/INCIDENTAL	SUS/INCIDENTAL	NONE
FUNCTIONAL POINT AND RATING	---	---	---	---	.2 (L)	---	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): 3 NORTHERN LEOPARD FROGS OBSERVED AT SITE IN 2001; NONE OBSERVED 2002 OR 2003.**14C. General Wildlife Habitat Rating**

- iv. Evidence of overall wildlife use in the AA: (Check either substantial, moderate, or low)

☒ **Substantial** (based on any of the following)

- ☒ observations of abundant wildlife #s or high species diversity (during any period)  
☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ presence of extremely limiting habitat features not available in the surrounding area  
☐ interviews with local biologists with knowledge of the AA

☐ **Low** (based on any of the following)

- ☐ few or no wildlife observations during peak use periods  
☐ little to no wildlife sign  
☐ sparse adjacent upland food sources  
☐ interviews with local biologists with knowledge of AA

☐ **Moderate** (based on any of the following)

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods  
☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.  
☐ adequate adjacent upland food sources  
☐ interviews with local biologists with knowledge of the AA

**II. WILDLIFE HABITAT FEATURES (WORKING FROM TOP TO BOTTOM, SELECT APPROPRIATE AA ATTRIBUTES TO DETERMINE THE EXCEPTIONAL (E), HIGH (H), MODERATE (M), OR LOW (L))**

RATING. STRUCTURAL DIVERSITY IS FROM #13. FOR CLASS COVER TO BE CONSIDERED EVENLY DISTRIBUTED, VEGETATED CLASSES MUST BE WITHIN 20% OF EACH OTHER IN TERMS OF

THEIR PERCENT COMPOSITION IN THE AA (SEE #10). DURATION OF SURFACE WATER: P/P = PERMANENT/PERENNIAL; S/I = SEASONAL/INTERMITTENT; T/E = TEMPORARY/EPHEMERAL; A= ABSENT.

Structural Diversity (from #13)	<input type="checkbox"/> High								<input type="checkbox"/> Moderate								<input checked="" type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	L	--	--

- iii.
- Rating**
- (Using 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.)

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input checked="" type="checkbox"/> Low
Substantial	--	--	--	.7 (M)
Moderate	--	--	--	--
Low	--	--	--	--

**Comments:** Three Blue-winged teal and northern shoveler broods observed in 2003, plus additional waterfowl and shorebirds.

**14D. GENERAL FISH/AQUATIC HABITAT RATING** ☒ NA (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [e.g. fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (e.g. fish use within an irrigation canal), then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. **Habitat Quality** (Pick the appropriate AA attributes in matrix to pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (e.g. submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading - 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

☐ Y ☐ N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to pick the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).)

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: NA

**14E. FLOOD ATTENUATION** ☐ NA (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

i. **Rating** (Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

☐ Y ☒ N Comments: \_\_\_\_\_

**14F. SHORT AND LONG TERM SURFACE WATER STORAGE** ☐ NA (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	.6 (M)	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL** ☐ NA (proceed to 14H)

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains <b>no or restricted outlet</b>	--	--	--	--	--	--	.3 (L)	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: Nutrient loading from cattle use; water very turbid.



**14H. SEDIMENT/ShORELINE STABILIZATION**☐ NA (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, check NA above.

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	<i><b>Duration of Surface Water Adjacent to Rooted Vegetation</b></i>		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	.2 (L)	--

Comments: Wave action.

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

A = acreage of vegetated component in the AA. B = structural diversity rating from #13. C = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet; P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral/absent.

A	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input checked="" type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.3L	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14J. GROUNDWATER DISCHARGE/RECHARGE (D/R)** (Check the indicators in i & ii below that apply to the AA)

- i. ☐ **Discharge Indicators**

- ☐ Springs are known or observed.  
☐ Vegetation growing during dormant season/drought.  
☐ Wetland occurs at the toe of a natural slope.  
☐ Seeps are present at the wetland edge.  
☐ AA permanently flooded during drought periods.  
☐ Wetland contains an outlet, but no inlet.  
☐ Other \_\_\_\_\_

- ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.  
☐ Wetland contains inlet but not outlet.  
☐ Other \_\_\_\_\_

- iii. **Rating:** Use the information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	--
No Discharge/Recharge indicators present	0.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: \_\_\_\_\_

**14K. UNIQUENESS**

- i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
<b>Low</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
<b>High</b> disturbance at AA (#12i)	--	--	--	--	--	--	--	.2L	--

Comments: \_\_\_\_\_

**14L. RECREATION / EDUCATION POTENTIAL**

- i. Is the AA a known recreational or educational site? ☐ Yes (Rate ☐ High (1.0), then proceed to 14L(ii) only] ☒ No [Proceed to 14L(iii)]

- ii. Check categories that apply to the AA: ☐ Educational / scientific study ☐ Consumptive rec. ☐ Non-consumptive rec. ☐ Other

- iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

- ☐ Yes [Proceed to 14L (ii) and then 14L(iv).] ☒ No [Rate as low in 14L(iv)]

- iv. **Rating** (Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from #12(i)		
	<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
<b>Public</b> ownership	--	--	--
<b>Private</b> ownership	--	--	.1(L)

Comments: Extremely remote



## FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.30	1	
B. MT Natural Heritage Program Species Habitat	Low	0.20	1	
C. General Wildlife Habitat	Moderate	0.70	1	
D. General Fish/Aquatic Habitat	NA	0.00	--	
E. Flood Attenuation	Low	0.20	1	
F. Short and Long Term Surface Water Storage	Moderate	0.60	1	
G. Sediment/Nutrient/Toxicant Removal	Low	0.30	1	
H. Sediment/Shoreline Stabilization	Low	0.20	1	
I. Production Export/Food Chain Support	Low	0.30	1	
J. Groundwater Discharge/Recharge	Low	0.10	1	
K. Uniqueness	Low	0.20	1	
L. Recreation/Education Potential	Low	0.10	1	
<b>Totals:</b>		<b><u>3.2</u></b>	<b><u>11.00</u></b>	
<b>Percent of Total Possible Points:</b>			<b><u>29%</u></b> (Actual / Possible) x 100 [rd to nearest whole #]	

<p><b>Category I Wetland:</b> (Must satisfy <b>one</b> of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation <b>and</b> answer to Question 14E(ii) is "yes"; <b>or</b></p> <p><input type="checkbox"/> Percent of total Possible Points is &gt; 80%.</p>
<p><b>Category II Wetland:</b> (Criteria for Category I not satisfied <b>and</b> meets any <b>one</b> of the following Category II criteria. If not satisfied, proceed to Category IV.)</p> <p><input type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for <b>both</b> General Wildlife Habitat <b>and</b> General Fish / Aquatic Habitat; <b>or</b></p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; <b>or</b></p> <p><input type="checkbox"/> Percent of total possible points is &gt; 65%.</p>
<p><input type="checkbox"/> <b>Category III Wetland:</b> (Criteria for Categories I, II, or IV not satisfied.)</p>
<p><b>Category IV Wetland:</b> (Criteria for Categories I or II are not satisfied <b>and</b> <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input checked="" type="checkbox"/> "Low" rating for Uniqueness; <b>and</b></p> <p><input checked="" type="checkbox"/> "Low" rating for Production Export / Food Chain Support; <b>and</b></p> <p><input checked="" type="checkbox"/> Percent of total possible points is &lt; 30%.</p>

**OVERALL ANALYSIS AREA (AA) RATING:** (Check appropriate category based on the criteria outlined above.)

☐ **I**
☐ **II**
☐ **III**
☒ **IV**





## Appendix C

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### **REPRESENTATIVE PHOTOGRAPHS 2001-2003 AERIAL PHOTOGRAPHS**

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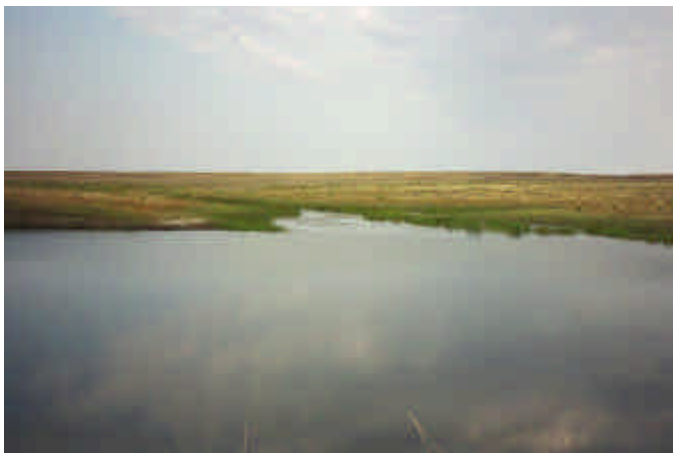
*MDT Wetland Mitigation Monitoring  
Fourchette Creek  
Phillips County, Montana*



Penguin, photo point 1, 60 degrees NE



Penguin, photo point 2, 344 degrees NW



Flashlight, photo point 1, 290 degrees NW



Flashlight, photo point 2, 270 degrees W



Flashlight, photo point 3, 90 degrees E



Pintail, photo point 1, 350 degrees N/NW

## 2003 Fourchette Creek Sheet 1



Pintail, photo point 1, 284 degrees NW



Pintail, photo point 2, 330 degrees NW



Puffin, photo point 1, 340 degrees N/NW



Puffin, photo point 2, 315 degrees W/NW



Albatross, photo point 1, 0 degrees N



Albatross, photo point 2, 60 degrees E/NE



**PENGUIN RESERVOIR (LEFT) AND PINTAIL RESERVOIR (RIGHT)**



Photo 1: July 17, 2001



Photo 2: July 22, 2002



Photo 3: July 28, 2003

**FLASHLIGHT RESERVOIR**



Photo 4: July 17, 2001



Photo 5: July 22, 2002



Photo 6: July 28, 2003

**ALBATROSS RESERVOIR**



Photo 7: July 17, 2001



Photo 8: July 22, 2002



Photo 9: July 28, 2003

**PUFFIN RESERVOIR**



Photo 10: July 17, 2001



Photo 11: July 22, 2002



Photo 12: July 28, 2003

**FOURCHETTE RESERVE**

**PHOTO SHEET 3**



## **Appendix D**

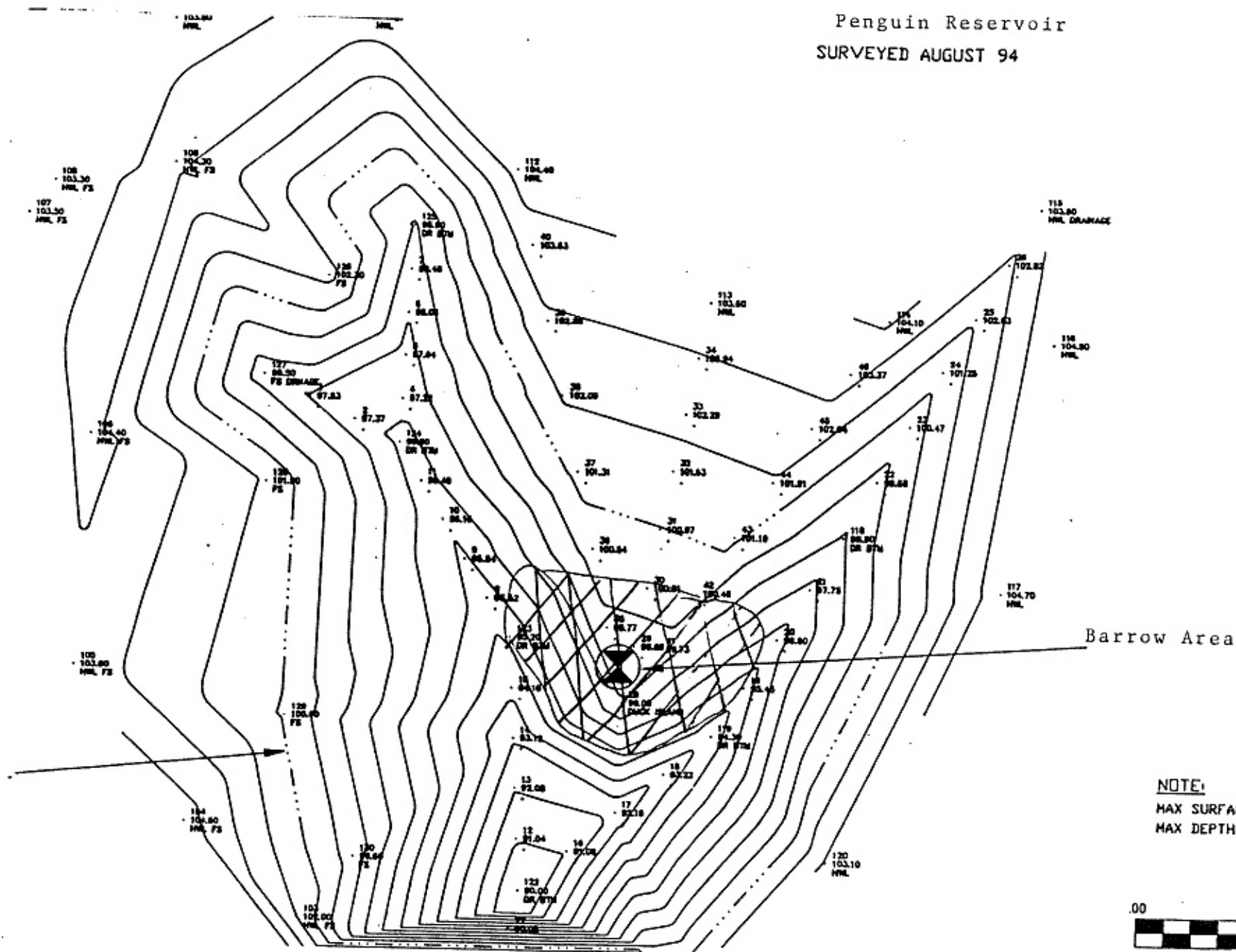
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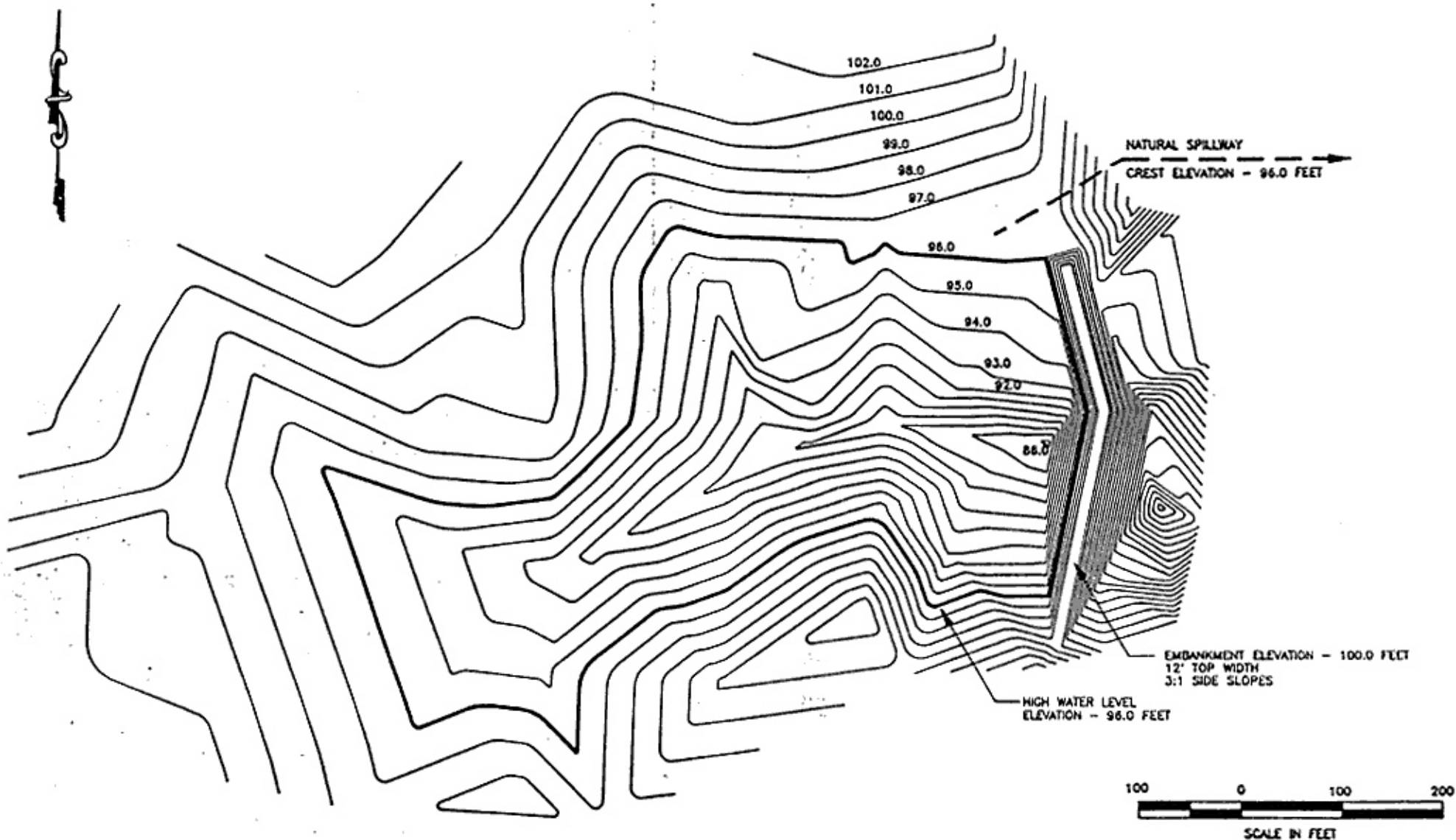
### **CONCEPTUAL SITE LAYOUTS**

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*MDT Wetland Mitigation Monitoring  
Fourchette Creek  
Phillips County, Montana*

# Penguin Reservoir SURVEYED AUGUST 94





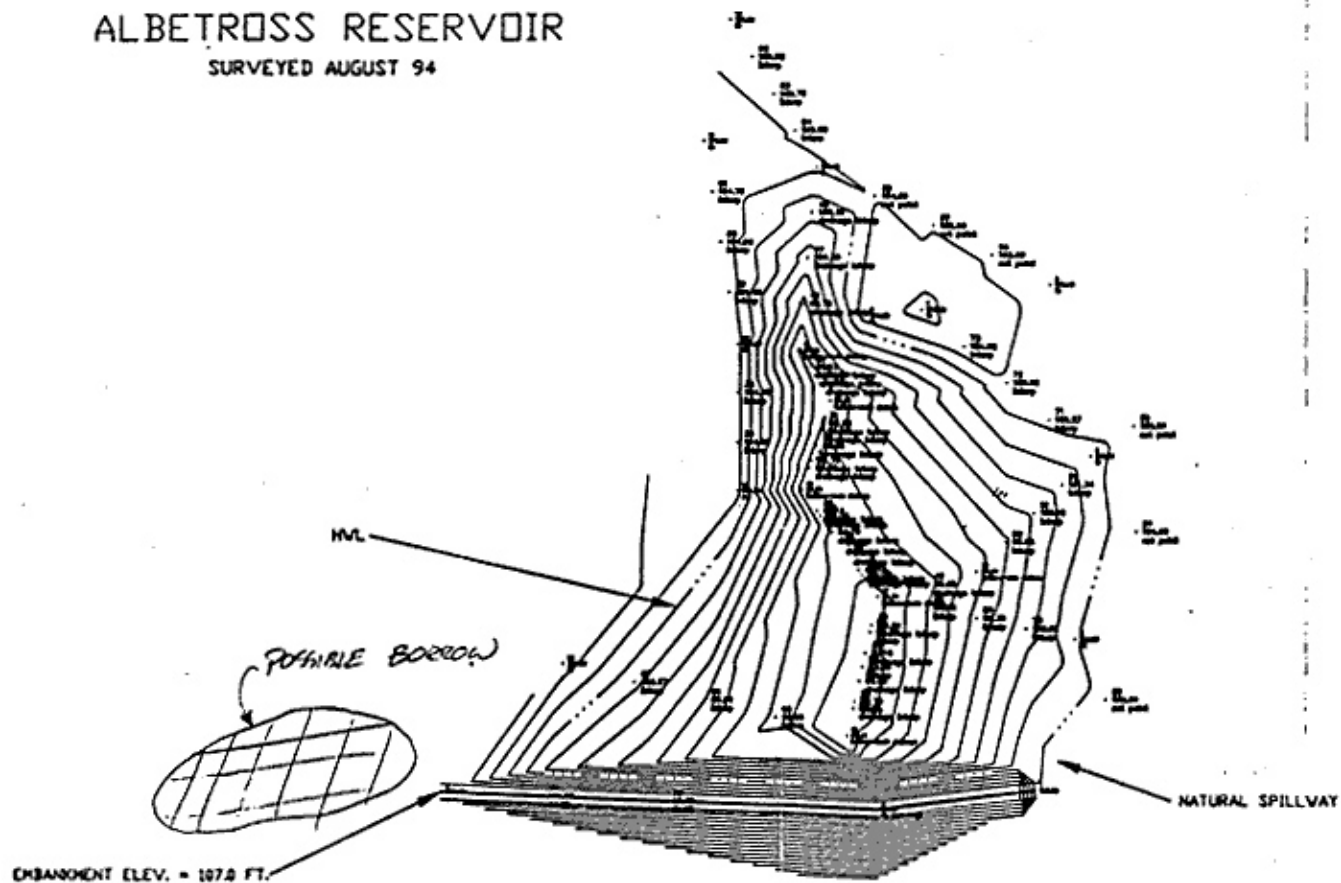
**NOTES**

MAXIMUM SURFACE AREA = 4.56 ACRES  
 MAXIMUM DEPTH = 10 FEET  
 MAXIMUM STORAGE (INCLUDING BORROW AREA) = 15.6 ACRE FEET

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT	TITLE <u>FLASHLIGHT RESERVOIR</u>	
	DATE <u>10-23</u>	DRAWN <u>TAS</u>
	DRAWING NO. <u>FLASHLT.DWG</u>	SHEET <u>1</u> of <u>1</u>
DESIGNED _____	REVIEWED _____	APPROVED _____

## ALBETROSS RESERVOIR

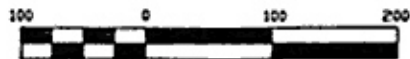
SURVEYED AUGUST 94



**NDTE:**

MAX SURFACE AREA = 2.60 ACRES

MAX DEPTH = 10 FEET



SCALE IN FEET

CONTOUR INTERVAL = 1 FT.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DRAWING NO. ALBETRES.DWG

TITLE ALBETROSS RESERVOIR

DATE 10-12-94 DRAWN HAC

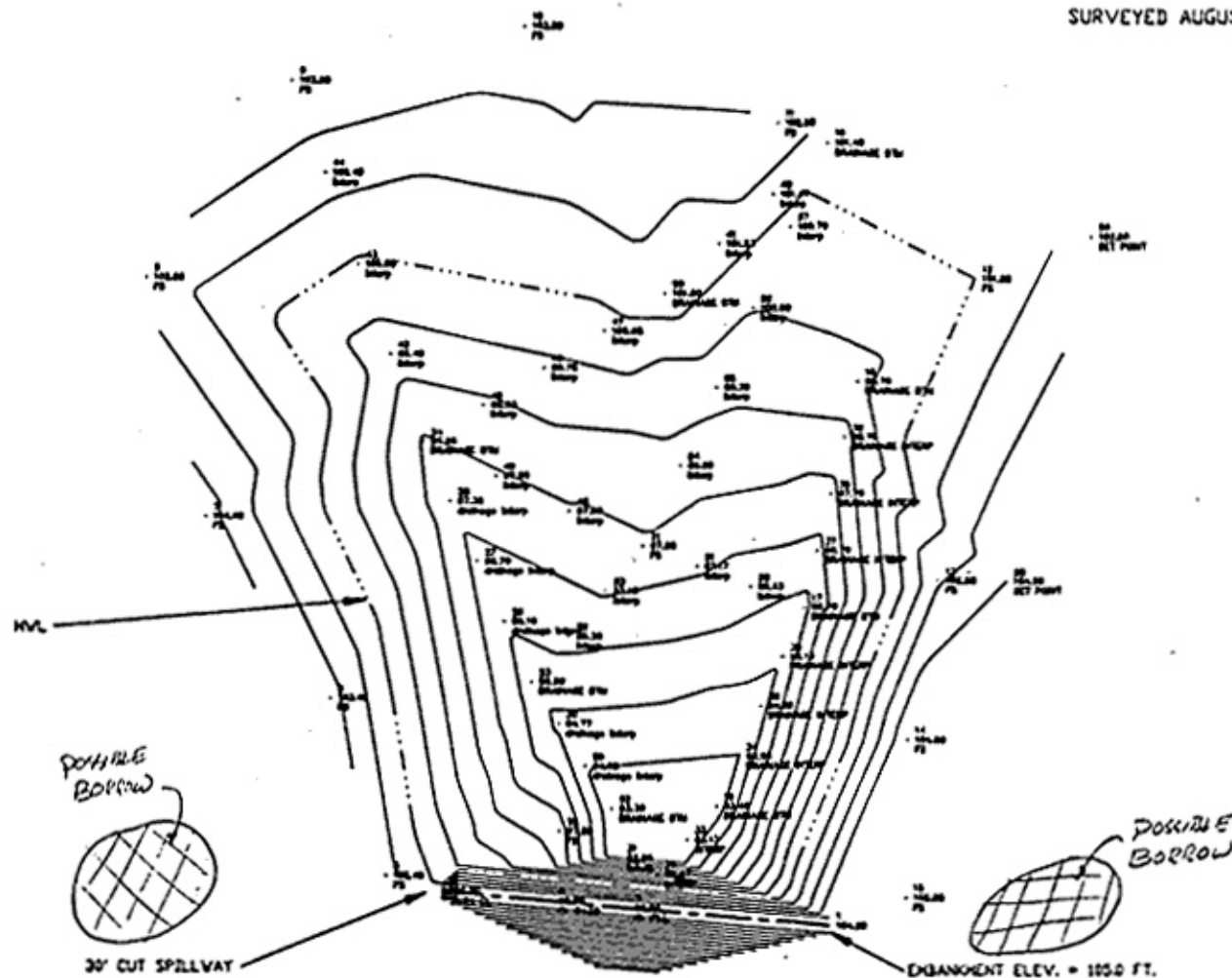
SHEET 1 of 1 REVIEWED

\_\_\_\_\_

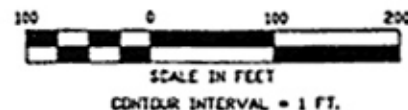


# PINTAILS RESERVOIR

SURVEYED AUGUST 94



NOTE:  
MAX SURFACE AREA = 3,209 ACRES  
MAX DEPTH = 8 FEET



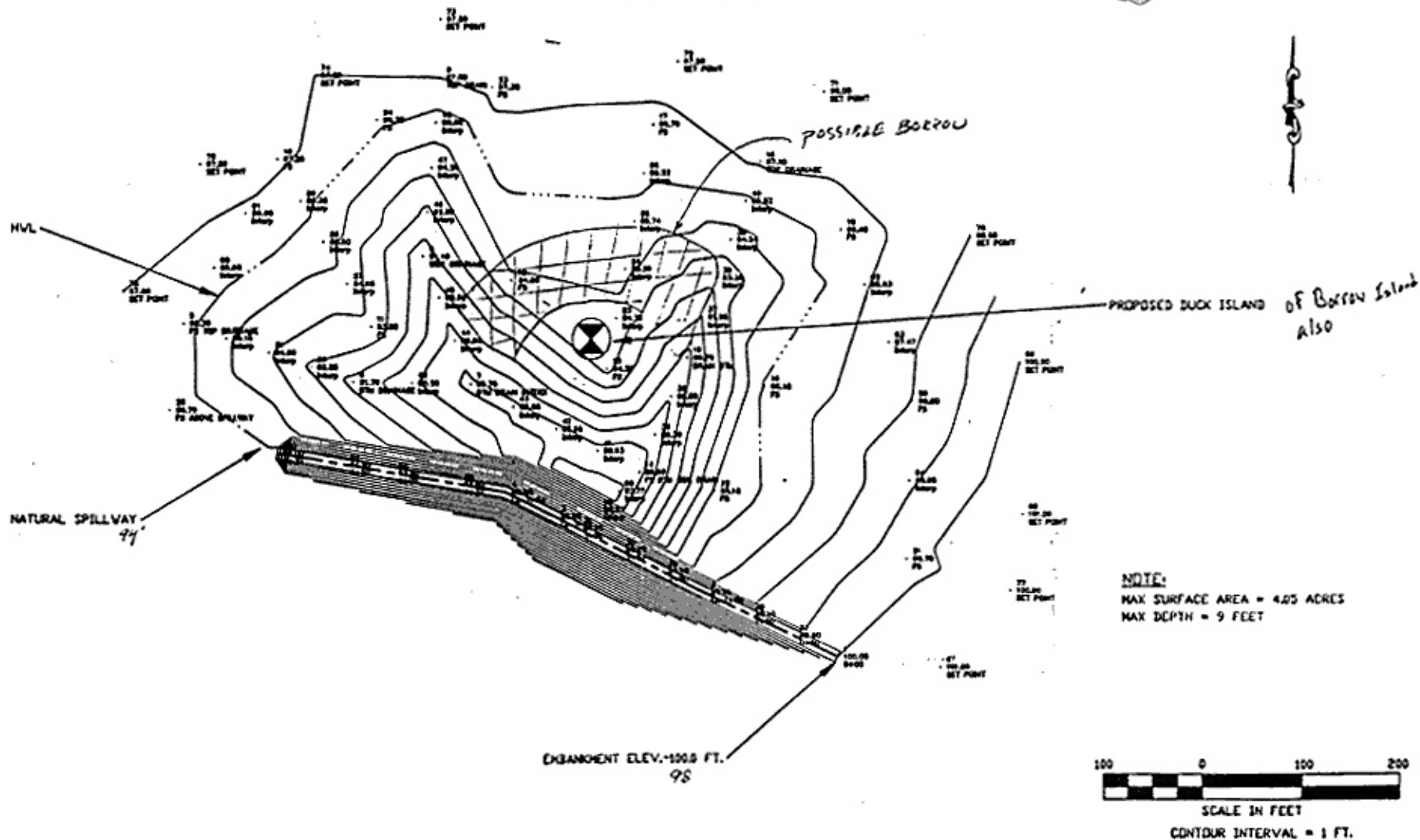
U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
DRAWING NO. PINTA.RS.DVG

TITLE PINTAILS RESERVOIR  
DATE 10-13-94 DRAWN HAC  
SHEET 1 of 1 REVIEWED

PUFFIN RESERVOIR

SURVEYED AUGUST 94

**LAND & WATER D-5**



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DRAWING NO. PUFENRES.DWG

TITLE PUFFIN RESERVOIR

DATE 10-17-94 DRAWN HAC

SHEET 1 of 1 REVIEWED

## **Appendix E**

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### **BIRD SURVEY PROTOCOL GPS PROTOCOL**

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*MDT Wetland Mitigation Monitoring  
Fourchette Creek  
Phillips County, Montana*

## **BIRD SURVEY PROTOCOL**

The following is an outline of the MDT Wetland Mitigation Site Monitoring Bird Survey Protocol. Though each site is vastly different, the bird survey data collection methods must be standardized to a certain degree to increase repeatability. An Area Search within a restricted time frame will be used to collect the following data: a bird species list, density, behavior, and habitat-type use. There will be some decisions that team members must make to fit the protocol to their particular site. Each of the following sections and the desired result describes the protocol established to reflect bird species use over time.

### **Species Use within the Mitigation Wetland: Survey Method**

Result: To conduct a bird survey of the wetland mitigation site within a restricted period of time and the budget allotment.

#### ***Sites that can be circumambulated or walked throughout.***

These types of sites will include ponds, enhanced historic river channels, wet meadows, and any area that can be surveyed from the entirety of its perimeter or walked throughout. If the wetland is not uncomfortably inundated, conduct several “meandering” transects through the site in an orderly fashion (record the number and approximate location/direction of the transects in the field notebook; they do not have to be formalized or staked). If a very small portion of the site cannot be crossed due to inundation, this method will also apply. Though the sizes of the site vary, each site will require surveying to the fullest extent possible within a set time limit. The optimum times to conduct the survey are in the morning hours. Conduct the survey from sunrise to no later than 11:00 AM. (Note: some sites may have to be surveyed in the late afternoon or evening due to time constraints or weather; if this is the case, record the time of day and include this information in your report discussion.) If the survey is completed before 11:00 AM and no additions are being made to the list, then the task is complete. The overall limiting factor regarding the number of hours that are spent conducting this survey is the number of budgeted hours; this determination must be made by site by each individual.

In many cases, binoculars will be the only instrument that is needed to identify and count the birds using the wetland. If the wetland includes deep water habitat that can not be assessed with binoculars, then a scope and tripod are necessary. If this is the case, establish as many lookout posts as necessary from key vantage points to collect the data. Depending on the size of the open water, more time may be spent viewing the mitigation area from these vantage points than is spent walking the peripheries of more shallow-water wetlands.

#### ***Sites that cannot be circumambulated.***

These types of sites will include large-bodied waters, such as reservoirs, particularly those with deep water habitat (>6 ft) close to the shore and no wetland development in that area of the shoreline. If one area of the reservoir was graded in such a way to create or enhance the development of a wetland, then that will be the area in which the ambulatory bird survey is conducted. The team member must then determine the length of the shoreline that will be surveyed during each visit.



As stated above in the ambulatory site section, these large sites most likely will have to be surveyed from established vantage points.

### **Species Use within the Mitigation Wetland: Data Recording**

Result: A complete list of bird species using the site, an estimate of bird densities and associated behaviors, and identification of habitat use.

#### ***1. Bird Species List***

Record the bird species on the Bird Survey - Field Data Sheet using the appropriate 4-letter code of the common name. The coding uses the first two letters of the first two words of the birds' common name or if one name, the first four (4) letters. For example, mourning dove is coded MODO and mallard is MALL. If an unknown individual is observed, use the following protocol and define your abbreviation at the bottom of the field data sheet: unknown shorebird: UNSB; unknown brown bird (UNBR); unknown warbler (UNWA); unknown waterfowl (UNWF). For a flyover of a flock of unknown species, use a term that describes the birds' general characteristics and include the approximate flock size in parentheses; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded: UNBB / FO (25). You may also note on the data sheet if that particular individual is using a constructed nest box.

#### ***2. Bird Density***

In the office, sum the Bird Survey – Field Data Sheet data by species and by behavior. Record this data in the Bird Summary Table.

#### ***3. Bird Behavior***

Bird behavior must be identified by what is known. When a species is simply observed, the behavior that it is immediately exhibiting is what is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair individual (BP); foraging (F); flyover (FO); loafing (L; e.g. sleeping, roosting, floating with head tucked under wing are loafing behaviors); and, nesting (N). If more behaviors are observed that do have a specific descriptive word, use them and we will add it to the protocol; descriptive words or phrases such as “migrating” or “living on site” are unknown behaviors.

#### ***4. Bird Species Habitat Use***

We are interested in what bird species are using which particular habitat within the mitigation wetlands. This data is easily collected by simply recording what habitat the species was initially observed. Use the following broad category habitat classifications: aquatic bed (AB - rooted floating, floating-leaved, or submergent vegetation); forested (FO); marsh (MA – cattail, bulrush, emergent vegetation, etc. with surface water); open water (OW – primarily unvegetated); scrub-shrub (SS); and upland buffer (UP); wet meadow (WM – sedges, rushes, grasses with little to no surface water). If other categories are observed onsite that are not suggested here, we will make a new category next year.

## **GPS Mapping and Aerial Photo Referencing Procedure**

The wetland boundaries, photograph location points and sampling locations were field located with mapping grade Trimble Geo III GPS units. The data was collected with a minimum of three positions per feature using Course/Acquisition code. The collected data was then transferred to a PC and differentially corrected to the nearest operating Community Base Station. The corrected data was then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The GPS positions collected and processed had a 68% accuracy of 7 feet except in isolated areas of Tasks .008 and .011, where it went to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

Aerial reference points were used to position the aerial photographs. This positioning did not remove the distortion inherent in all photos; this imagery is to be used as a visual aide only. The located wetland boundaries were given a final review by the wetland biologist and adjustments were made if necessary.

Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

## **Appendix F**

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### **MACROINVERTEBRATE SAMPLING PROTOCOL AND DATA**

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*MDT Wetland Mitigation Monitoring  
Fourchette Creek  
Phillips County, Montana*

# AQUATIC INVERTEBRATE SAMPLING PROTOCOL

## Equipment List

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

## Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

## Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.

This step is optional, but it gives you a chance to see that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

### **Sample Handling/Shipping**

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.



**MDT WETLAND MITIGATION MONITORING PROJECT**  
**Aquatic Invertebrate Monitoring**  
*Summary 2001, 2002, 2003*

## **METHODS**

Among other monitoring activities, aquatic invertebrate assemblages were collected at a number of mitigation wetlands throughout Montana. This report summarizes data generated from three years of collection.

The method employed to assess these wetlands is based on constructing an index using a battery of 12 bioassessment metrics or attributes (**Table 1**) tested and recommended by Stribling et al. (1995) in a report to the Montana Department of Health and Environmental Science. In that study, it was determined that some of the metrics were of limited use in some geographic regions, and for some wetland types. Despite that finding, all 12 metrics are used in this evaluation of mitigated wetlands, since detailed geographic information and wetland classifications were unavailable.

Scoring criteria for metrics were developed by generally following the tactic used by Stribling et al. Boxplots were generated and distributions, ranges, and quartiles for each metric were examined. All sites were used except Camp Creek, which was sampled in 2002 and 2003. The fauna at that site was different from that of the other sites, and suggested montane stream conditions rather than wetland conditions. The Camp Creek site was assessed using the tested metric battery developed for montane streams of Western Montana (Bollman 1998). For the wetlands, “optimal” scores were generally those that fell above the 75<sup>th</sup> percentile (for those metrics that decrease in value in response to stress) or below the 25<sup>th</sup> percentile (for metrics that respond to stress by an increase in value) of all scores. Additional scoring ranges were established by bisecting the range below the 75<sup>th</sup> percentile for decreasing scores (or above the 25<sup>th</sup> percentile for increasing scores) into “sub-optimal” and “poor” assessment categories. A score of 5, 3, or 1 was assigned to optimal, sub-optimal, and poor metric performance, respectively. In this way, metric values were translated into normalized metric scores, and scores for all metrics were summed to produce a total bioassessment score. Total bioassessment scores were classified according to a similar process, using the ranges and distributions of total scores for all sites studied.

The purpose of constructing an index from biological attributes or metrics is to provide a means of integrating information to facilitate the determination of whether management action is needed. The nature of the action needed is not determined solely by the index score, however, but by consideration of an analysis of the component metrics, the taxonomic composition of the assemblages and other issues. The diagnostic functions of the metrics and taxonomic data need more study; our understanding of the interrelationships of natural environmental factors and anthropogenic disturbances are tentative. Thus, the further interpretive remarks accompanying the raw taxonomic and metric data are offered cautiously.

### **Sample Processing**

Aquatic invertebrate samples were collected at mitigation wetland sites in the summer months of 2001, 2002, and 2003 by personnel of Wetlands West, Inc. and/or Land & Water Consulting, Inc. Sampling procedures utilized were based on the protocols developed by the Montana Department of Environmental Quality (MDEQ).

Sampling consisted of D-frame net sweeps through emergent vegetation (when present), the water column, over the water surface, and included disturbing and scraping substrates at each sampled sites. Samples were preserved in ethanol at each wetland site and subsequently delivered to Rhithron Associates, Inc. for processing, taxonomic determinations, and data analysis.

At Rhithron’s laboratory, Caton subsamplers and stereomicroscopes with 10X magnification were used to randomly select a minimum of 200 organisms, when possible, from each sample. In some cases, the entire sample contained fewer than 200 organisms; in these cases, all organisms from the sample were taken. Taxa were identified in general accordance with the taxonomic resolution standards set out in the MDEQ Standard Operating Procedures for Sampling and Sample Analysis (Bukantis 1998). Ten percent of samples were re-identified by a second taxonomist

for quality assurance purposes. The identified samples have been archived at Rhithron's laboratory. Taxonomic data and organism counts were entered into an Excel 2000 spreadsheet, and metrics were calculated and scored using spreadsheet formulae.

### Bioassessment Metrics

An index based on the performance of 12 metrics was constructed, as described above. **Table 1** lists those metrics, describes their calculation and the expected response of each to increased degradation or impairment of the wetland.

In addition to the summed scores of each metric and the associated impairment classification described above, each individual metric informs the bioassessment to some degree. The four richness metrics (Total taxa, POET, Chironomidae taxa, and Crustacea taxa + Mollusca taxa) can be interpreted to express habitat complexity as well as water quality. Complex, diverse habitats consist of variable substrates, emergent vegetation, variable water depths and other factors, and are potential features of long-established stable wetlands with minimal human disturbance. In the study conducted by Stribling et al. (1995), all four richness metrics were found to be significantly associated with water quality parameters including conductance, salinity, and total dissolved solids.

Four composition metrics (%Chironomidae, %Orthocladiinae of Chironomidae, %Crustacea + %Mollusca, and Amphipoda) measure the relative contributions of certain taxonomic groups that may have significant responses to habitat and/or water quality impacts. For example, amphipods have been demonstrated to increase in abundance in alkaline conditions. Short-lived, relatively mobile taxa such as chironomids dominate ephemeral environments; any are hemoglobin-bearers capable of tolerating de-oxygenated conditions.

Two tolerance metrics (the Hilsenhoff Biotic Index and %Dominant taxon) were included in the bioassessment battery. The HBI indicates the overall invertebrate assemblage tolerance to nutrient enrichment, warm water, and/or low dissolved oxygen conditions. The percent abundance of the dominant taxon has been demonstrated to be strongly associated with pH, conductance, salinity, total organic carbon, and total dissolved solids.

Two trophic measures (%Collector-gatherers and %Filterers) may be helpful in expressing functional integrity of the invertebrate assemblage, which can be impacted by poor water quality or habitat degradation. High proportions of filtering organisms suggest nutrient and/or organic enrichment, while abundant collectors suggest more positive functional conditions and well-developed wetland morphology. These organisms graze periphyton growing on stable surfaces such as macrophytes.

## RESULTS

In 2001, 29 sites were sampled statewide. Nineteen of these sites were revisited in 2002, and 13 new sites were sampled. In 2003, 17 sites that had been visited in both 2001 and 2002 were re-sampled, and 11 sites sampled for the first time in 2001 were re-visited. In addition, 2 new sites were sampled. Thus, the 2003 database contains records for 90 sampling events at 44 unique sites. **Table 2** summarizes sites and sampling dates.

Metric scoring criteria were re-developed each year as new data was added. For 2003, 88 records were utilized. Because of the addition of data, scoring criteria changed for several metrics in 2003; thus, biotic condition classifications assigned in 2002 for some sites also changed. However, ranges of individual metrics, as well as median metric values remained remarkably consistent in each of the three years.

**Table 1.** Aquatic invertebrate metrics employed in the MTDT mitigation wetland monitoring study, 2001- 2003.

<b>Metric</b>	<b>Metric Calculation</b>	<b>Expected Response to Degradation or Impairment</b>
Total taxa	Count of unique taxa identified to lowest recommended taxonomic level	Decrease
POET	Count unique Plecoptera, Trichoptera, Ephemeroptera, and Odonata taxa identified to lowest recommended taxonomic level	Decrease
Chironomidae taxa	Count unique midge taxa identified to lowest recommended taxonomic level	Decrease
Crustacea taxa + Mollusca taxa	Count unique Crustacea taxa and Mollusca taxa identified to lowest recommended taxonomic level	Decrease
% Chironomidae	Percent abundance of midges in the subsample	Increase
Orthoclaadiinae/Chironomidae	Number of individual midges in the sub-family Orthoclaadiinae / total number of midges in the subsample.	Decrease
%Amphipoda	Percent abundance of amphipods in the subsample	Increase
%Crustacea + %Mollusca	Percent abundance of crustaceans in the subsample plus percent abundance of molluscs in the subsample	Increase
HBI	Relative abundance of each taxon multiplied times that taxon's modified Hilsenhoff Biotic Index value. These numbers are summed over all taxa in the subsample.	Increase
%Dominant taxon	Percent abundance of the most abundant taxon in the subsample	Increase
%Collector-Gatherers	Percent abundance of organisms in the collector-gatherer functional group	Decrease
%Filterers	Percent abundance of organisms in the filterer functional group	Increase

## LITERATURE CITED

- Bollman, W. 1998. Montana Valleys and Foothill Prairies Ecoregion. Master's Thesis. (M.S.) University of Montana. Missoula, Montana.
- Bukantis, R. 1998. Rapid bioassessment macroinvertebrate protocols: Sampling and sample analysis SOP's. Working draft. Montana Department of Environmental Quality. Planning Prevention and Assistance Division. Helena, Montana.
- Stribling, J.B., J. Lathrop-Davis, M.T. Barbour, J.S. White, and E.W. Leppo. 1995. Evaluation of environmental indicators for the wetlands of Montana: the multimetric approach using benthic macroinvertebrates. Report to the Montana Department of Health and Environmental Science. Helena, Montana.

Table 2. Sampled MDT Mitigation Sites by Year

2001	2002	2003
Beaverhead 1	Beaverhead 1	Beaverhead 1
Beaverhead 2	Beaverhead 2	
Beaverhead 3	Beaverhead 3	
Beaverhead 4	Beaverhead 4	Beaverhead 4
Beaverhead 5	Beaverhead 5	Beaverhead 5
Beaverhead 6	Beaverhead 6	Beaverhead 6
Big Sandy 1		
Big Sandy 2		
Big Sandy 3		
Big Sandy 4		
Johnson-Valier		
VIDA		
Cow Coulee	Cow Coulee	Cow Coulee
Fourchette - Puffin	Fourchette - Puffin	Fourchette - Puffin
Fourchette - Flashlight	Fourchette - Flashlight	Fourchette - Flashlight
Fourchette - Penguin	Fourchette - Penguin	Fourchette - Penguin
Fourchette - Albatross	Fourchette - Albatross	Fourchette - Albatross
Big Spring	Big Spring	Big Spring
Vince Ames		
Ryegate		
Lavinia		
Stillwater	Stillwater	Stillwater
Roundup	Roundup	Roundup
Wigeon	Wigeon	Wigeon
Ridgeway	Ridgeway	Ridgeway
Musgrave - Rest. 1	Musgrave - Rest. 1	Musgrave - Rest. 1
Musgrave - Rest. 2	Musgrave - Rest. 2	Musgrave - Rest. 2
Musgrave - Enh. 1	Musgrave - Enh. 1	Musgrave - Enh. 1
Musgrave - Enh. 2		
	Hoskins Landing	Hoskins Landing
	Peterson - 1	Peterson - 1
	Peterson - 2	
	Peterson - 4	Peterson - 4
	Peterson - 5	Peterson - 5
	Jack Johnson - main	Jack Johnson - main
	Jack Johnson - SW	Jack Johnson - SW
	Creston	Creston
	Lawrence Park	
	Perry Ranch	
	SF Smith River	SF Smith River
	Camp Creek	Camp Creek
	Kleinschmidt	Kleinschmidt - pond
		Kleinschmidt - stream
		Ringling - Galt

**Aquatic Invertebrate Taxonomic Data****Site Name** FOURCHETTE CREEK PUFFIN RESERVOIR**Date Collected** 7/31/2003

<b>Order</b>	<b>Family</b>	<b>Taxon</b>	<b>Count</b>	<b>Percent</b>	<b>Unique</b>	<b>BI</b>	<b>FFG</b>
		Ostracoda	4	6.45%	Yes	8	CG
<b>Acarina</b>		Copepoda	49	79.03%	Yes	8	CG
	Acari	Acari	1	1.61%	Yes	5	PR
<b>Amphipoda</b>	Talitridae	<i>Hyaletta</i>	1	1.61%	Yes	8	CG
<b>Basommatophora</b>	Lymnaeidae	<i>Stagnicola</i>	1	1.61%	Yes	6	SC
<b>Coleoptera</b>	Hydrophilidae	<i>Berosus</i>	1	1.61%	Yes	5	PR
<b>Diplostraca</b>		Cladocera	1	1.61%	Yes	8	CF
<b>Heteroptera</b>	Corixidae	Corixidae	2	3.23%	No	10	PH
		<i>Sigara</i>	1	1.61%	Yes	5	PH
	Notonectidae	Notonectidae	1	1.61%	Yes	10	PR
<b>Grand Total</b>			<b>62</b>				



**Aquatic Invertebrate Taxonomic Data**
**Site Name** FOURCHETTE CREEK ALBATROSS RESERVOIR

**Date Collected** 7/31/2003

Order	Family	Taxon	Count	Percent	Unique	BI	FFG
<b>Coleoptera</b>	Dytiscidae	Ostracoda	1	0.76%	Yes	8	CG
		<i>Hygrotus</i>	2	1.53%	Yes	5	PR
<b>Diplostraca</b>		<i>Liodessus</i>	1	0.76%	Yes	5	PR
<b>Diptera</b>		Cladocera	59	45.04%	Yes	8	CF
		Ceratopogonidae					
		Ceratopogoninae	1	0.76%	Yes	6	PR
		Chironomidae					
		Cricotopus (Isocladius)	40	30.53%	Yes	7	SH
		<i>Glyptotendipes</i>	1	0.76%	Yes	10	SH
		<i>Psectrocladius</i>	5	3.82%	Yes	8	CG
<b>Ephemeroptera</b>	Baetidae						
		<i>Callibaetis</i>	5	3.82%	Yes	9	CG
<b>Haplotaxida</b>	Naididae						
<b>Heteroptera</b>		<i>Nais</i>	6	4.58%	Yes	8	CG
		Corixidae					
		Corixidae	2	1.53%	No	10	PH
		<i>Sigara</i>	3	2.29%	Yes	5	PH
		Notonectidae					
<b>Odonata</b>		<i>Notonecta</i>	1	0.76%	Yes	5	PR
		Coenagrionidae					
		<i>Enallagma</i>	3	2.29%	Yes	7	PR
<b>Rhynchohellida</b>	Glossiphoniidae						
<b>Grand Total</b>		<i>Theromyzon</i>	1	0.76%	Yes	10	PR
			<b>131</b>				

**Aquatic Invertebrate Taxonomic Data**
**Site Name** FOURCHETTE CREEK FLASHLIGHT RESERVOIR

**Date Collected** 7/31/2003

<b>Order</b>	<b>Family</b>	<b>Taxon</b>	<b>Count</b>	<b>Percent</b>	<b>Unique</b>	<b>BI</b>	<b>FFG</b>
<b>Acarina</b>	Acari	Acari	1	1.64%	Yes	5	PR
<b>Amphipoda</b>	Talitridae	<i>Hyalella</i>	21	34.43%	Yes	8	CG
<b>Basommatophora</b>	Physidae	Physidae	6	9.84%	Yes	8	SC
<b>Coleoptera</b>	Haliplidae	Haliplidae	2	3.28%	Yes	7	SH
	Hydrophilidae	<i>Helophorus</i>	1	1.64%	Yes	11	SH
<b>Diptera</b>	Ceratopogonidae	Ceratopogoninae	4	6.56%	Yes	6	PR
	Chironomidae	Cricotopus (Isocladius)	1	1.64%	Yes	7	SH
		<i>Cryptochironomus</i>	1	1.64%	Yes	8	PR
		<i>Psectrocladius</i>	1	1.64%	Yes	8	CG
	Tabanidae	Tabanidae	2	3.28%	Yes	6	PR
<b>Ephemeroptera</b>	Baetidae	<i>Callibaetis</i>	1	1.64%	Yes	9	CG
	Caenidae	<i>Caenis</i>	5	8.20%	Yes	7	CG
<b>Heteroptera</b>	Corixidae	Corixidae	3	4.92%	No	10	PH
		<i>Sigara</i>	1	1.64%	Yes	5	PH
	Notonectidae	<i>Notonecta</i>	9	14.75%	Yes	5	PR
<b>Rhynchobdellida</b>	Glossiphoniidae	<i>Helobdella stagnalis</i>	1	1.64%	Yes	10	PR
<b>Trichoptera</b>	Leptoceridae	<i>Mystacides</i>	1	1.64%	Yes	4	CG
<b>Grand Total</b>			<b>61</b>				

**Aquatic Invertebrate Taxonomic Data**
**Site Name** FOURCHETTE CREEK PENGUIN RESERVOIR

**Date Collected** 7/31/2003

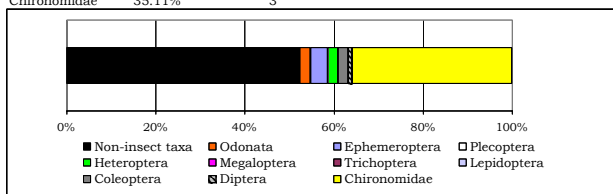
Order	Family	Taxon	Count	Percent	Unique	BI	FFG
		Ostracoda	40	23.53%	Yes	8	CG
<b>Amphipoda</b>		Copepoda	1	0.59%	Yes	8	CG
	Talitridae	<i>Hyalella</i>	38	22.35%	Yes	8	CG
<b>Basommatophora</b>	Physidae	Physidae	2	1.18%	Yes	8	SC
	Planorbidae	<i>Gyraulus</i>	2	1.18%	Yes	8	SC
<b>Coleoptera</b>	Dytiscidae	<i>Agabus</i>	1	0.59%	Yes	5	PR
		<i>Hygrotus</i>	1	0.59%	Yes	5	PR
		<i>Liodessus</i>	6	3.53%	Yes	5	PR
	Haliplidae	<i>Haliphus</i>	6	3.53%	Yes	5	PH
	Hydrophilidae	<i>Tropisternus</i>	1	0.59%	Yes	5	PR
<b>Diplostraca</b>							
<b>Diptera</b>		Cladocera	1	0.59%	Yes	8	CF
	Ceratopogonidae	Ceratopogoninae	7	4.12%	Yes	6	PR
	Chironomidae	<i>Ablabesmyia</i>	1	0.59%	Yes	8	CG
		<i>Chironomus</i>	2	1.18%	Yes	10	CG
		<i>Corynoneura</i>	1	0.59%	Yes	7	CG
		Cricotopus (Isocladius)	1	0.59%	Yes	7	SH
		<i>Cryptochironomus</i>	1	0.59%	Yes	8	PR
		<i>Paratanytarsus</i>	8	4.71%	Yes	6	CG
		<i>Procladius</i>	1	0.59%	Yes	9	PR
		<i>Psectrocladius</i>	24	14.12%	Yes	8	CG
		<i>Tvetenia</i>	2	1.18%	Yes	5	CG
	Culicidae	Culicidae	1	0.59%	Yes	10	CG
<b>Ephemeroptera</b>	Baetidae	<i>Callibaetis</i>	12	7.06%	Yes	9	CG
	Caenidae	<i>Caenis</i>	2	1.18%	Yes	7	CG
<b>Heteroptera</b>	Corixidae	Corixidae	7	4.12%	Yes	10	PH
	Notonectidae	<i>Notonecta</i>	1	0.59%	Yes	5	PR
<b>Grand Total</b>			<b>170</b>				

**Aquatic Invertebrate Data Summary****Project ID:** MDT03LW**STORET Station ID:****Station Name:** FOURCHETTE CREEK ALBATROSS RESERVOIR

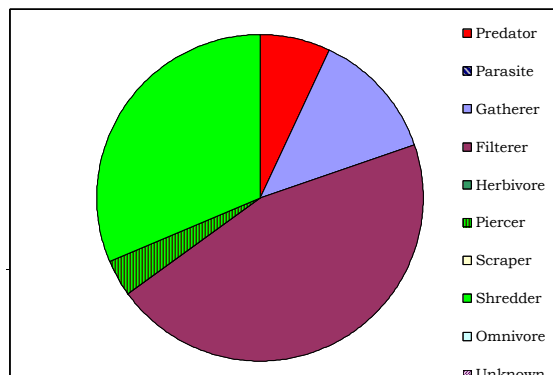
Sample type	
SUBSAMPLE TOTAL ORGANISMS	131
Portion of sample used	10.00%
Estimated number in total sample	1310
Sampling effort	
Time	
Distance	
Jabs	
Habitat type	
EPT abundance	5
Taxa richness	14
Number EPT taxa	1
Percent EPT	3.82%

**TAXONOMIC COMPOSITION**

GROUP	PERCENT	#TAXA
Non-insect taxa	51.15%	4
Odonata	2.29%	1
Ephemeroptera	3.82%	1
Plecoptera	0.00%	0
Heteroptera	2.29%	3
Megaloptera	0.00%	0
Trichoptera	0.00%	0
Lepidoptera	0.00%	0
Coleoptera	2.29%	2
Diptera	0.76%	1
Chironomidae	35.11%	3

**FUNCTIONAL COMPOSITION**

GROUP	PERCENT	#TAXA
Predator	6.87%	6
Parasite	0.00%	0
Gatherer	12.98%	4
Filterer	45.04%	1
Herbivore	0.00%	0
Piercer	3.82%	2
Scraper	0.00%	0
Shredder	31.30%	2
Omnivore	0.00%	0
Unknown	0.00%	0

**COMMUNITY TOLERANCES**

Sediment tolerant taxa	0
Percent sediment tolerant	0.00%
Sediment sensitive taxa	0
Metals tolerance index (McGuire)	10.05
Cold stenotherm taxa	0
Percent cold stenotherms	0.00%

**HABITUS MEASURES**

Hemoglobin bearer richness	2
Percent hemoglobin bearers	1.53%
Air-breather richness	2
Percent air-breathers	2.29%
Burrower richness	2
Percent burrowers	1.53%
Swimmer richness	5
Percent swimmers	19.08%

**Activity ID:****Sample Date:** 7/31/2003**DOMINANCE**

TAXON	ABUNDANCE	PERCENT
Cladocera	59	45.04%
Cricotopus (Isocladus)	40	30.53%
Nais	6	4.58%
Callibaetis	5	3.82%
Psectrocladius	5	3.82%
SUBTOTAL 5 DOMINANTS	115	87.79%
Enallagma	3	2.29%
Sigara	3	2.29%
Corixidae	2	1.53%
Hygrotus	2	1.53%
Theromyzon	1	0.76%
TOTAL DOMINANTS	126	96.18%

**SAPROBITY**

Hilsenhoff Biotic Index 7.21

**DIVERSITY**

Shannon H (loge)	1.94
Shannon H (log2)	1.35
Margalef D	2.87
Simpson D	0.30
Evenness	0.09

**VOLTINISM**

TYPE	# TAXA	PERCENT
Multivoltine	6	84.73%
Univoltine	6	12.98%
Semivoltine	2	2.29%

**TAXA CHARACTERS**

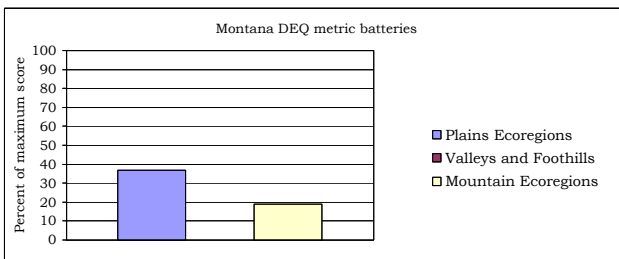
	#TAXA	PERCENT
Tolerant	2	7.63%
Intolerant	0	0.00%
Clinger	1	30.53%

**BIOASSESSMENT INDICES****B-IBI (Karr et al.)**

METRIC	VALUE	SCORE
Taxa richness	14	1
E richness	1	1
P richness	0	1
T richness	0	1
Long-lived	2	1
Sensitive richness	0	1
%tolerant	7.63%	5
%predators	6.87%	1
Clinger richness	1	1
%dominance (3)	80.15%	1
TOTAL SCORE		14
		28%

**MONTANA DEQ METRICS (Bukantis 1998)**

METRIC	VALUE	Plains Ecoregions	Valleys and Foothills	Mountain Ecoregions
Taxa richness	14	1	1	0
EPT richness	1	0	0	0
Biotic Index	7.21	0	0	0
%Dominant taxon	45.04%	1	1	0
%Collectors	58.02%	3	3	3
%EPT	3.82%	0	0	0
Shannon Diversity	1.35	0	0	0
%Scrapers +Shredders	31.30%	3	3	1
Predator taxa	6	3	3	3
%Multivoltine	84.73%	0	0	0
%H of T	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TOTAL SCORES	11	11	11	4
PERCENT OF MAXIMUM	36.67	36.67	36.67	19.05
IMPAIRMENT CLASS	MODERATE	MODERATE	MODERATE	SEVERE

**Montana Plains ecoregions metrics (Bramblett and Johnson)**

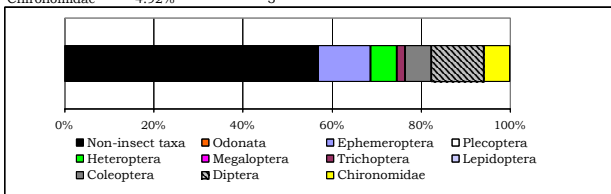
Riffle	Pool
EPT richness	1 E richness
Percent EPT	3.82% T richness
Percent Oligochaetes and Leeches	5.34% Percent EPT
Percent 2 dominants	75.57% Percent non-insect
Filterer richness	1 Filterer richness
Percent intolerant	0.00% Univoltine richness
Univoltine richness	6 Percent supertolerant
Percent clingers	30.53%
Swimmer richness	5

**Aquatic Invertebrate Data Summary****Project ID:** MDT03LW**STORET Station ID:****Station Name:** FOURCHETTE CREEK FLASHLIGHT RESERVOIR

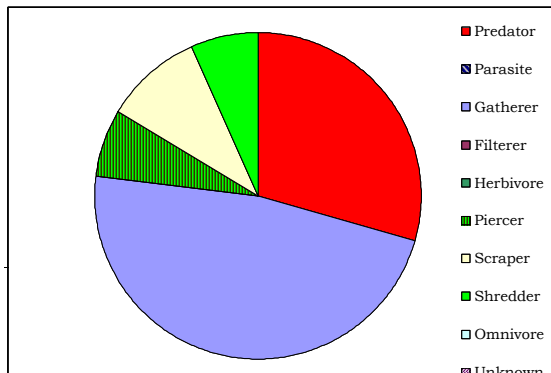
Sample type	
SUBSAMPLE TOTAL ORGANISMS	61
Portion of sample used	100.00%
Estimated number in total sample	61
Sampling effort	
Time	
Distance	
Jabs	
Habitat type	
EPT abundance	7
Taxa richness	16
Number EPT taxa	3
Percent EPT	11.48%

**TAXONOMIC COMPOSITION**

GROUP	PERCENT	#TAXA
Non-insect taxa	47.54%	4
Odonata	0.00%	0
Ephemeroptera	9.84%	2
Plecoptera	0.00%	0
Heteroptera	4.92%	3
Megaloptera	0.00%	0
Trichoptera	1.64%	1
Lepidoptera	0.00%	0
Coleoptera	4.92%	2
Diptera	9.84%	2
Chironomidae	4.92%	3

**FUNCTIONAL COMPOSITION**

GROUP	PERCENT	#TAXA
Predator	29.51%	6
Parasite	0.00%	0
Gatherer	47.54%	5
Filterer	0.00%	0
Herbivore	0.00%	0
Piercer	6.56%	2
Scraper	9.84%	1
Shredder	6.56%	3
Omnivore	0.00%	0
Unknown	0.00%	0

**COMMUNITY TOLERANCES**

Sediment tolerant taxa	0
Percent sediment tolerant	0.00%
Sediment sensitive taxa	0
Metals tolerance index (McGuire)	2.70
Cold stenotherm taxa	0
Percent cold stenotherms	0.00%

**HABITUS MEASURES**

Hemoglobin bearer richness	1
Percent hemoglobin bearers	14.75%
Air-breather richness	1
Percent air-breathers	3.28%
Burrower richness	1
Percent burrowers	6.56%
Swimmer richness	5
Percent swimmers	19.67%

**Activity ID:****Sample Date:** 7/31/2003**DOMINANCE**

TAXON	ABUNDANCE	PERCENT
Hyalella	21	34.43%
Notonecta	9	14.75%
Physidae	6	9.84%
Caenis	5	8.20%
Ceratopogoninae	4	6.56%
SUBTOTAL 5 DOMINANTS	45	73.77%
Corixidae	3	4.92%
Halipilidae	2	3.28%
Tabanidae	2	3.28%
Helobdella stagnalis	1	1.64%
Acari	1	1.64%
TOTAL DOMINANTS	54	88.52%

**SAPROBITY**

Hilsenhoff Biotic Index 6.87

**DIVERSITY**

Shannon H (log <sub>e</sub> )	3.17
Shannon H (log <sub>2</sub> )	2.20
Margalef D	3.89
Simpson D	0.15
Evenness	0.13

**VOLTINISM**

TYPE	# TAXA	PERCENT
Multivoltine	5	8.20%
Univoltine	9	86.89%
Semivoltine	2	4.92%

**TAXA CHARACTERS**

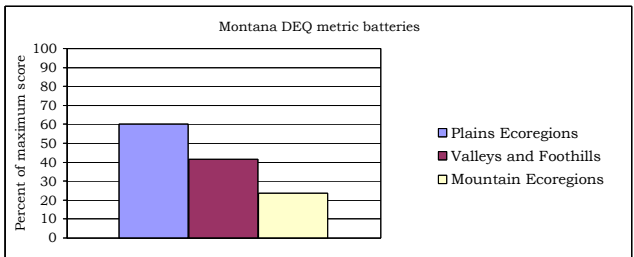
	#TAXA	PERCENT
Tolerant	8	31.15%
Intolerant	0	0.00%
Clinger	1	1.64%

**BIOASSESSMENT INDICES****B-IBI (Karr et al. )**

METRIC	VALUE	SCORE
Taxa richness	16	1
E richness	2	1
P richness	0	1
T richness	1	1
Long-lived	2	1
Sensitive richness	0	1
%tolerant	31.15%	3
%predators	29.51%	3
Clinger richness	1	1
%dominance (3)	59.02%	3
TOTAL SCORE		16
		32%

**MONTANA DEQ METRICS (Bukantis 1998)**

METRIC	VALUE	Plains Ecoregions	Valleys and Foothills	Mountain Ecoregions
Taxa richness	16	1	1	0
EPT richness	3	1	0	0
Biotic Index	6.87	1	0	0
%Dominant taxon	34.43%	2	2	2
%Collectors	47.54%	3	3	3
%EPT	11.48%	1	0	0
Shannon Diversity	2.20	1		
%Scrapers +Shredders	16.39%	2	1	0
Predator taxa	6	3		
%Multivoltine	8.20%	3		
%H of T	0.00%		3	
TOTAL SCORES		18	10	5
PERCENT OF MAXIMUM		60.00	41.67	23.81
IMPAIRMENT CLASS		SLIGHT	MODERATE	MODERATE

**Montana Plains ecoregions metrics (Bramblett and Johnson)**

Riffle	Pool
EPT richness	3 E richness
Percent EPT	11.48% T richness
Percent Oligochaetes and Leeches	1.64% Percent EPT
Percent 2 dominants	49.18% Percent non-insect
Filterer richness	0 Filterer richness
Percent intolerant	0.00% Univoltine richness
Univoltine richness	9 Percent supertolerant
Percent clingers	1.64%
Swimmer richness	5



**Aquatic Invertebrate Data Summary**

Project ID: MDT03LW

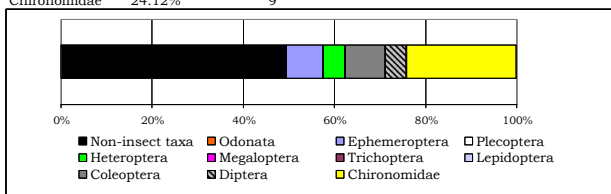
STORET Station ID:

Station Name: FOURCHETTE CREEK PENGUIN RESERVOIR

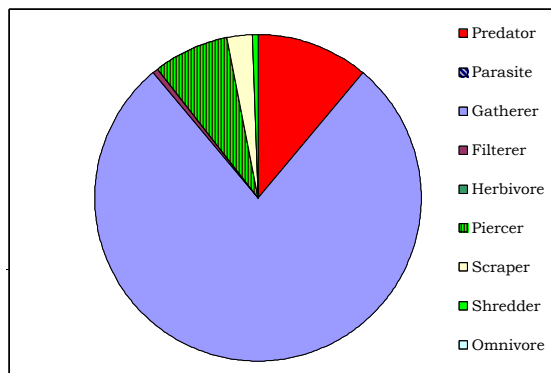
Sample type	
SUBSAMPLE TOTAL ORGANISMS	170
Portion of sample used	21.67%
Estimated number in total sample	785
Sampling effort	
Time	
Distance	
Jabs	
Habitat type	
EPT abundance	14
Taxa richness	26
Number EPT taxa	2
Percent EPT	8.24%

**TAXONOMIC COMPOSITION**

GROUP	PERCENT	#TAXA
Non-insect taxa	49.41%	6
Odonata	0.00%	0
Ephemeroptera	8.24%	2
Plecoptera	0.00%	0
Heteroptera	4.71%	2
Megaloptera	0.00%	0
Trichoptera	0.00%	0
Lepidoptera	0.00%	0
Coleoptera	8.82%	5
Diptera	4.71%	2
Chironomidae	24.12%	9

**FUNCTIONAL COMPOSITION**

GROUP	PERCENT	#TAXA
Predator	11.18%	8
Parasite	0.00%	0
Gatherer	77.65%	12
Filterer	0.59%	1
Herbivore	0.00%	0
Piercer	7.65%	2
Scraper	2.35%	2
Shredder	0.59%	1
Omnivore	0.00%	0
Unknown	0.00%	0

**COMMUNITY TOLERANCES**

Sediment tolerant taxa	1
Percent sediment tolerant	1.18%
Sediment sensitive taxa	0
Metals tolerance index (McGuire)	6.20
Cold stenotherm taxa	0
Percent cold stenotherms	0.00%

**HABITUS MEASURES**

Hemoglobin bearer richness	3
Percent hemoglobin bearers	2.94%
Air-breather richness	5
Percent air-breathers	5.88%
Burrower richness	2
Percent burrowers	5.29%
Swimmer richness	0
Percent swimmers	0.00%

**Activity ID:**

Sample Date: 7/31/2003

**DOMINANCE**

TAXON	ABUNDANCE	PERCENT
Ostracoda	40	23.53%
Hyalella	38	22.35%
Psectrocladius	24	14.12%
Callibaetis	12	7.06%
Paratanytarsus	8	4.71%
SUBTOTAL 5 DOMINANTS	122	71.76%
Corixidae	7	4.12%
Ceratopogoninae	7	4.12%
Liodes	6	3.53%
Haliplus	6	3.53%
Physidae	2	1.18%
TOTAL DOMINANTS	150	88.24%

**SAPROBITY**

Hilsenhoff Biotic Index 7.23

**DIVERSITY**

Shannon H (loge)	3.36
Shannon H (log2)	2.34
Margalef D	4.86
Simpson D	0.13
Evenness	0.09

**VOLITINISM**

TYPE	# TAXA	PERCENT
Multivoltine	13	55.88%
Univoltine	8	35.29%
Semivoltine	5	8.82%

**TAXA CHARACTERS**

	#TAXA	PERCENT
Tolerant	11	31.76%
Intolerant	0	0.00%
Clinger	1	0.59%

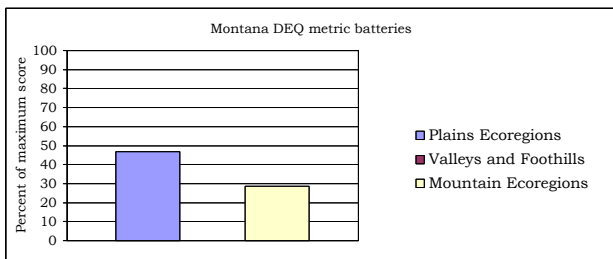
**BIOASSESSMENT INDICES**

B-IBI (Karr et al. )

METRIC	VALUE	SCORE
Taxa richness	26	3
E richness	2	1
P richness	0	1
T richness	0	1
Long-lived	5	5
Sensitive richness	0	1
%tolerant	31.76%	3
%predators	11.18%	3
Clinger richness	1	1
%dominance (3)	60.00%	3
TOTAL SCORE		22
		44%

**MONTANA DEQ METRICS (Bukantis 1998)**

METRIC	VALUE	Plains Ecoregions	Valleys and Foothills	Mountain Ecoregions
Taxa richness	26	3	2	2
EPT richness	2	0	0	0
Biotic Index	7.23	0	0	0
%Dominant taxon	23.53%	3	3	3
%Collectors	78.24%	2	1	1
%EPT	8.24%	0	0	0
Shannon Diversity	2.34	1		
%Scrapers + Shredders	2.94%	0	0	0
Predator taxa	8	3		
%Multivoltine	55.88%	2		
%H of T	#DIV/0!	#DIV/0!		
TOTAL SCORES	14	#DIV/0!		6
PERCENT OF MAXIMUM	46.67	#DIV/0!		28.57
IMPAIRMENT CLASS	MODERATE	#DIV/0!		MODERATE

**Montana Plains ecoregions metrics (Bramblett and Johnson)**

Rifle	Pool
EPT richness	2 E richness
Percent EPT	8.24% T richness
Percent Oligochaetes and Leeches	0.00% Percent EPT
Percent 2 dominants	45.88% Percent non-insect
Filterer richness	1 Filterer richness
Percent intolerant	0.00% Univoltine richness
Univoltine richness	8 Percent supertolerant
Percent clingers	0.59%
Swimmer richness	0

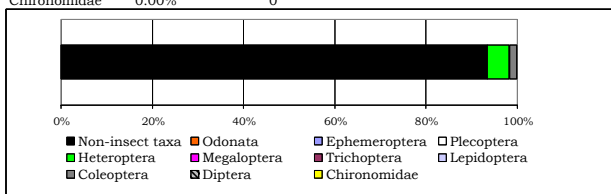
**Aquatic Invertebrate Data Summary****Project ID:** MDT03LW**STORET Station ID:****Station Name:** FOURCHETTE CREEK PUFFIN RESERVOIR

Sample type	
SUBSAMPLE TOTAL ORGANISMS	62
Portion of sample used	100.00%
Estimated number in total sample	62
Sampling effort	
Time	
Distance	
Jabs	

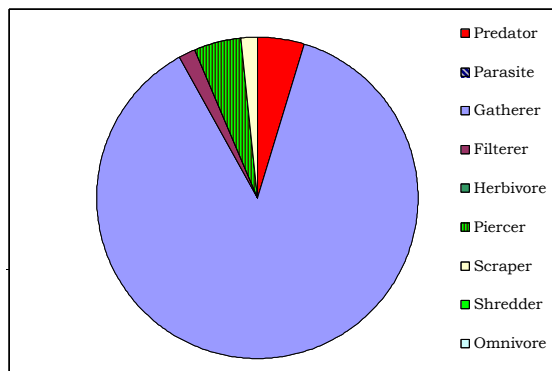
Habitat type	
EPT abundance	0
Taxa richness	9
Number EPT taxa	0
Percent EPT	0.00%

**TAXONOMIC COMPOSITION**

GROUP	PERCENT	#TAXA
Non-insect taxa	91.94%	6
Odonata	0.00%	0
Ephemeroptera	0.00%	0
Plecoptera	0.00%	0
Heteroptera	4.84%	3
Megaloptera	0.00%	0
Trichoptera	0.00%	0
Lepidoptera	0.00%	0
Coleoptera	1.61%	1
Diptera	0.00%	0
Chironomidae	0.00%	0

**FUNCTIONAL COMPOSITION**

GROUP	PERCENT	#TAXA
Predator	4.84%	3
Parasite	0.00%	0
Gatherer	87.10%	3
Filterer	1.61%	1
Herbivore	0.00%	0
Piercer	4.84%	2
Scraper	1.61%	1
Shredder	0.00%	0
Omnivore	0.00%	0
Unknown	0.00%	0

**COMMUNITY TOLERANCES**

Sediment tolerant taxa	1
Percent sediment tolerant	1.61%
Sediment sensitive taxa	0
Metals tolerance index (McGuire)	10.27
Cold stenotherm taxa	0
Percent cold stenotherms	0.00%

**HABITUS MEASURES**

Hemoglobin bearer richness	1
Percent hemoglobin bearers	1.61%
Air-breather richness	1
Percent air-breathers	1.61%
Burrower richness	0
Percent burrowers	0.00%
Swimmer richness	7
Percent swimmers	45.16%

**Activity ID:****Sample Date:** 7/31/2003**DOMINANCE**

TAXON	ABUNDANCE	PERCENT
Copepoda	49	79.03%
Ostracoda	4	6.45%
Corixidae	2	3.23%
Stagnicola	1	1.61%
Cladocera	1	1.61%
SUBTOTAL 5 DOMINANTS	57	91.94%
Hyaella	1	1.61%
Acari	1	1.61%
Sigara	1	1.61%
Notonectidae	1	1.61%
Berosus	1	1.61%
TOTAL DOMINANTS	62	100.00%

**SAPROBITY**

Hilsenhoff Biotic Index 7.00

**DIVERSITY**

Shannon H (loge)	1.15
Shannon H (log2)	0.80
Margalef D	2.18
Simpson D	0.63
Evenness	0.08

**VOLTINISM**

TYPE	# TAXA	PERCENT
Multivoltine	4	88.71%
Univoltine	4	9.68%
Semivoltine	1	1.61%

**TAXA CHARACTERS**

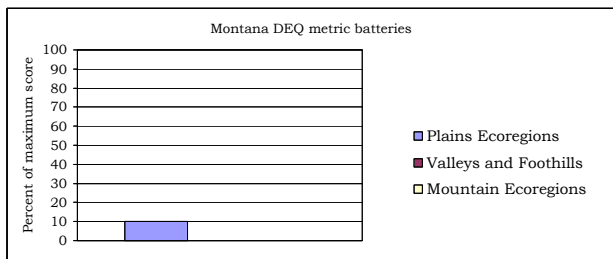
	#TAXA	PERCENT
Tolerant	2	3.23%
Intolerant	0	0.00%
Clinger	0	0.00%

**BIOASSESSMENT INDICES****B-IBI (Karr et al. )**

METRIC	VALUE	SCORE
Taxa richness	9	1
E richness	0	1
P richness	0	1
T richness	0	1
Long-lived	1	1
Sensitive richness	0	1
%tolerant	3.23%	5
%predators	4.84%	1
Clinger richness	0	1
%dominance (3)	88.71%	1
TOTAL SCORE		14 28%

**MONTANA DEQ METRICS (Bukantis 1998)**

METRIC	VALUE	Plains Ecoregions	Valleys and Foothills	Mountain Ecoregions
Taxa richness	9	0	0	0
EPT richness	0	0	0	0
Biotic Index	7.00	1	0	0
%Dominant taxon	79.03%	0	0	0
%Collectors	88.71%	1	1	0
%EPT	0.00%	0	0	0
Shannon Diversity	0.80	0	0	0
%Scrapers +Shredders	1.61%	0	0	0
Predator taxa	3	1	0	0
%Multivoltine	88.71%	0	0	0
%H of T	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TOTAL SCORES	3	3	0	0
PERCENT OF MAXIMUM	10.00	#DIV/0!	#DIV/0!	0.00
IMPAIRMENT CLASS	SEVERE	#DIV/0!	#DIV/0!	SEVERE

**Montana Plains ecoregions metrics (Bramblett and Johnson)**

Rifle	Pool
EPT richness	0 E richness
Percent EPT	0.00% T richness
Percent Oligochaetes and Leeches	0.00% Percent EPT
Percent 2 dominants	85.48% Percent non-insect
Filterer richness	1 Filterer richness
Percent intolerant	0.00% Univoltine richness
Univoltine richness	4 Percent supertolerant
Percent clingers	0.00%
Swimmer richness	7